



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

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Aircraft Serious Incident Investigation Report

PT Citilink Indonesia

Airbus A320-200; PK-GLW

Near Juanda Airport, Surabaya

Republic of Indonesia

21 July 2022

2022

This Preliminary Report is 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 investigation carried out by the KNKT in accordance with Annex 13 to the Convention on International Civil Aviation, 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 August 2022

**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**



SOERJANTO TJAHJONO

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ABBREVIATIONS AND DEFINITIONS

APP	: Approach
APU	: Auxiliary Power Unit
ARFF	: Airport Rescue and Fire Fighting
ATPL	: Airline Transport Pilot License
CASR	: Civil Aviation Safety Regulation
C of A	: Certificate of Airworthiness
C of R	: Certificate of Registration
CTR	: Control Zone
CPL	: Commercial Pilot License
CVR	: Cockpit Voice Recorder
ECAM	: Electronic Centralized Aircraft Monitoring
EMK	: Emergency Medical Kit
FA	: Flight Attendant
FAC	: Flight Attendant Certificate
FCOM	: Flight Crew Operating Manual
FDR	: Flight Data Recorder
FL	: Flight Level
GCS	: Glasgow Coma Scale
ILS	: Instrument Landing System
<i>KNKT</i>	: <i>Komite Nasional Keselamatan Transportasi</i>
LT	: Local Time
OM-A	: Operation Manual Part A
OM-B2	: Operation Manual Part B2
PF	: Pilot Flying
PIC	: Pilot in Command
PM	: Pilot Monitoring
RNP	: Required Navigation Performance
SIC	: Second in Command
TMA	: Terminal Control Area
TWR	: Tower Controller
UTC	: Universal Time Coordinated

SYNOPSIS

On 21 July 2022, an Airbus A320-200 aircraft, registered PK-GLW was being operated by PT Citilink Indonesia (Citilink) on a scheduled passenger flight from Juanda International Airport (WARR), Surabaya to Sultan Hasanuddin International Airport (WAAA), Makassar with flight number CTV307.

Prior to the flight, both pilots conducted blood pressure and oxygen saturation tests and the result for both pilots were normal. During the flight preparation, the Pilot in Command (PIC) conducted a pre-flight briefing to all crewmember in the aircraft. There was no report of health problem of crewmembers or aircraft technical system abnormality.

The flight consisted of two pilots, four flight attendants and 171 passengers. The PIC acted as Pilot Monitoring (PM) and the Second in Command (SIC) acted as Pilot Flying (PF).

At 2315 UTC (0615 LT), on daylight condition, the aircraft departed Surabaya and about two minutes after, the SIC saw the PIC was in stiff position, the SIC attempted to check the PIC consciousness and was no response.

The SIC informed to Flight Attendant 1 (FA1) who then informed other FA. A doctor onboard the flight examined the PIC and conducted medical treatment to the PIC.

The SIC contacted the air traffic controller and Citilink operation ground station informed that the PIC was incapacitated and requested assistance.

The SIC flying the aircraft by himself including read and performed the checklist. The aircraft landed safely and stopped on the runway. Considering that the PIC required immediate assistance, then the SIC decided to continue taxi to the parking stand.

After the aircraft stopped and the forward cabin door was opened, the medical personnel of the airport entered the aircraft to examine the PIC condition. The PIC then transported to a hospital. The PIC was found death upon arrival at the hospital.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 21 July 2022, an Airbus A320-200 aircraft, registered PK-GLW was being operated by PT Citilink Indonesia (Citilink) on a scheduled passenger flight from Juanda International Airport (WARR), Surabaya¹ to Sultan Hasanuddin International Airport (WAAA), Makassar with flight number CTV307.

Prior to the flight, both pilots conducted blood pressure and oxygen saturation test. The result of the tests for both pilots were normal. During the flight preparation, the Pilot in Command (PIC) conducted a pre-flight briefing to all crewmember in the aircraft.

The flight was the first flight of the day for both pilots. Prior to departure, there was no report of health problem of crewmembers or aircraft technical system abnormality.

The flight consisted of two pilots, four flight attendants and 171 passengers. The PIC acted as Pilot Monitoring (PM) and the Second in Command (SIC) acted as Pilot Flying (PF). At 2315 UTC (0615 LT²), on daylight condition, the aircraft departed Surabaya and after the aircraft took off, the Surabaya Tower controller (TWR controller) instructed the pilot to contact Surabaya Approach controller on frequency 125.1 MHz as the further air traffic services would be provided by Terminal Control Area (TMA) controller³. The aircraft took off with packs off take off configuration⁴.

The PIC made initial contact with the TMA controller and was instructed to climb to Flight Level (FL) 230 (altitude of 23,000 feet), and to fly directing to Waypoint PEDSO⁵. The PIC responded the instruction by requesting the TMA controller to repeat the name of the waypoint. The TMA controller then repeated the instruction to direct Waypoint PEDSO. The PIC readback and relayed the instruction to the SIC.

At 0616 LT, an alert appeared on the Electronic Centralized Aircraft Monitoring (ECAM) showed that the Air Pack 2 was still in OFF and the SIC selected the Air Pack 2 to ON.

About few seconds later, the SIC saw the PIC was in stiff position, the SIC attempted to check the PIC consciousness and was no response. The SIC then engaged the autopilot.

At 0617 LT, the SIC asked the Flight Attendant (FA) to come to the cockpit by using the interphone. The FA1 came to the cockpit and was advised by the SIC that the PIC incapacitated. The FA1 then informed the FA3 that the PIC was incapacitated and asked her to seek medical assistance among the passengers.

¹ Juanda International Airport (WARR), Surabaya will be named as Surabaya for the purpose of this report.

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

³ Based on the active Notice to Airmen (NOTAM), between 1100 up to 2259 UTC, the approach control service within Surabaya Control Zone (CTR) and Terminal Control Area (TMA) was provided by TMA controller on frequency 125.1 MHz.

⁴ Packs off take off configuration is the procedure on take-off by switching off the packs to close the bleed air supply from the engine to the aircraft air conditioning system in order to maximize the engine power.

⁵ Waypoint PEDSO is located at coordinate 06°58'25"S 113°59'05"E, about 50.5 nautical miles from Runway 28.

The FA1 went back to the cockpit brought an aromatherapy oil to stimulate the PIC as she was assumed that the PIC was fainted.

At 0619 LT, the SIC declared an urgency message PAN PAN to the Citilink Operation⁶ personnel using company radio communication channel. The SIC informed that the PIC was incapacitated and planned to return to Surabaya. The Citilink Operation personnel acknowledged the situation.

At 0620 LT, the SIC declared the urgency message PAN PAN to TMA controller and requested returning to Surabaya due to one pilot incapacitation. The TMA controller instructed the SIC to fly direct to Waypoint SADPU⁷ and descend to altitude of 3,500 feet.

A medical doctor who onboard as a passenger, responded the flight attendant and at 0621 LT, the doctor came to the cockpit accompanied by FA3. After examined the PIC, the doctor asked portable oxygen to the FA3.

At 0626 LT, the TMA controller asked the pilot whether requiring assistance on arrival and was responded by the SIC that they need 15 minutes holding.

The FA3 came to deliver portable oxygen bottle, along with FA2 who brought Emergency Medical Kit (EMK). At 0628 LT, the FA1 put on the oxygen mask to the PIC. About the same time, the TMA controller instructed the SIC to contact Surabaya Approach controller on frequency 123.2 MHz as the further approach control service would be provided by Approach (APP) controller.

The SIC made initial contact with APP controller and informed that the aircraft was holding on Waypoint SADPU. The APP controller responded by advising the SIC to report when ready for approach.

At 0630 LT, the APP controller instructed the SIC to turn left on heading 360° for traffic separation, and was acknowledged by the SIC. The APP controller then confirmed to the SIC whether any objection for another aircraft would be given a clearance to make landing approach prior to the CTV307. The SIC advised that he did not objection. The APP controller then instructed the SIC to return to Waypoint SADPU and maintain at altitude of 5,000 feet.

At 0632 LT, the Citilink Operation personnel asked the SIC whether need any assistance on arrival. The SIC requested an ambulance and ground support for electrical power and air conditioning as the Auxiliary Power Unit (APU) of the aircraft was unserviceable.

At 0634 LT, the FA3 made passenger announcement seeking a qualified Airbus A320 pilot on board the aircraft, however, there was no qualified pilot on board as passenger.

At 0635 LT, the SIC informed ready for approach to the APP controller and was approved to continue the landing approach to Runway 28 and to descend to altitude of 3,500 feet. The APP controller then canceled the clearance of another aircraft that was making a landing approach, with intention to give the CTV307 priority to land.

⁶ Citilink Operation is the Citilink ground station provided with a radio to communicate with pilots to coordinate the operational matters.

⁷ Waypoint SADPU is located at coordinate 07°25'45.9"S 113°01'49.4"E, about 14 nautical miles from Runway 28.

About 0637 LT, the doctor advised the FA1 and FA2 that the PIC breathing and pulse were no longer detected. The doctor also asked both FAs to lay down the PIC on the cockpit floor. After the PIC laid down on the cockpit floor, resuscitation was given to the PIC by the doctor and assisted by the two FAs.

At 0638 LT, the APP controller cleared the SIC to descend to altitude of 2,500 feet and to make Required Navigation Performance (RNP) approach to Runway 28.

At 0642 LT, when the aircraft was about 7 Nm to the runway, the APP controller instructed the pilot to contact the TWR controller and then was issued a clearance to land using Runway 28.

After hearing the landing gear was being extended, the FA1 went to cabin to conduct landing preparation and asked the FA3 to announce that the aircraft was about to land.

When the aircraft altitude was about 2,000 feet, the SIC decided to make a go around considering that the flight was un-stabilize and the doctor with the FA2 were still resuscitating the PIC. At 0645 LT, the SIC advised making a go around to the TWR controller and requested to make landing approach using Runway 10. The TWR controller then instructed the pilot to climb to altitude of 5,000 feet and fly to Waypoint LOTEK⁸.

At 0649 LT, the SIC suggested the doctor and the FA2 to return the PIC to his seat as the aircraft was about to land. The FA2 asked the FA3 to assist returning the PIC on his seat.

At 0650 UTC, the SIC reported to the TWR controller that the aircraft was establishing localizer of Instrument Landing System (ILS) Runway 10 and was instructed to continue the landing approach. About one minute later, the SIC asked the FA2 to fasten the seatbelt and to lock the PIC shoulder harness. The FA3 and the doctor went back to the cabin, while FA2 remained in the cockpit and occupied the third pilot seat to make sure the PIC was well guarded.

Since the PIC had incapacitated, the SIC flying the aircraft by himself including read and performed the checklist.

At 0656 LT, the aircraft landed on Runway 10 with flap full down configuration and autobrake medium selection. The landing weight was estimated on overweight condition (64.7 tons). After landing, the SIC stopped for about a minute on the runway near Taxiway N5. The TWR controller confirmed the SIC whether if everything was fine and was affirmed.

Considering that the PIC required immediate assistance, then the SIC decided to vacate the runway via Taxiway N6 to the Parking Stand 6 of the Terminal 1. After the aircraft stopped and the forward cabin door was opened, the medical personnel of the airport entered the aircraft to examine the PIC condition. The PIC then transported to a hospital. The PIC was found death upon arrival at the hospital and the time of death was unknown.

Afterward, the passengers disembarked the aircraft. No injury reported in this occurrence. No damage to the aircraft nor to airport facility reported.

⁸ Waypoint LOTEK is located at coordinate 07°20'22.2"S 112°32'19.4"E, about 14 nautical miles from Runway 10.

1.2 Personnel Information

1.2.1 Pilot in Command

The PIC was 48 years Indonesian which had Airline Transport Pilot License (ATPL) and qualified as an Airbus A320 pilot. The last proficiency check of the PIC was conducted on 13 July 2022.

The flying experience of the PIC was as follows:

Last 90 days	: 166 hours 29 minutes
Last 30 days	: 46 hours 30 minutes
Last 7 days	: 17 hours 7 minutes
Last 24 hours	: 5 hours 37 minutes
This flight	: 54 minutes

The last medical examination of the PIC was conducted on 6 June 2022, including the test of fasting blood glucose, kidney function, liver function, lipid profile, uric acid and treadmill. The result showed that the PIC was in overweight condition, and cholesterol level was higher than standard. The PIC was also an active smoker.

Based on these medical examination results, after receiving medical education related to the overweight and high cholesterol level, the PIC was granted a First-Class medical certificate with limitation to wear corrective lenses for near and distant vision, which would valid until 8 December 2022.

Prior to the flight, the PIC left the hotel about 0440 LT. After arrived at the airport, the PIC underwent blood pressure check and the result was normal. According to the other crew member who met the PIC at the day of the occurrence stated that the PIC appeared to be normal and showed no sign of any illnesses.

1.2.2 Second in Command

The SIC was 26 years Indonesian which had Commercial Pilot License (CPL) and qualified as Airbus A320 pilot. The SIC also had a valid First-Class medical certificate without any limitation.

The last proficiency check of the SIC was conducted on 20 April 2022.

The flying experience of the PIC was as follows:

Total hours	: 128 hours 26 minutes
Last 90 days	: 86 hours 37 minutes
Last 30 days	: 27 hours 54 minutes
Last 7 days	: 5 hours 37 minutes
Last 24 hours	: 5 hours 37 minutes
This flight	: 54 minutes

The SIC was released to be a qualified SIC in March 2022. The SIC had completed several trainings, including recurrent of Crew Emergency Training on 3 June 2021 and last recurrent of Safety Emergency Procedure on 6 April 2022.

1.2.3 Flight Attendants

All flight attendants were Indonesian and held valid Flight Attendant Certificate (FAC) with an Airbus A320 rating. The flight attendants also held valid Second-Class medical certificates.

1.3 Aircraft Information

The Airbus A320 registered PK-GLW was manufactured by Airbus, a France aircraft company in 2013 with serial number of 5597.

At the day of the occurrence, the aircraft had a valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R). There was no record and report of aircraft abnormality prior to the flight.

The Flight Crew Operating Manual (FCOM), chapter Normal Procedure described the procedure of pack off takeoff configuration as follow:

Before takeoff procedure

PACKS

*PACK 1 pb-sw and PACK 2 pb-sw.....AS RQRD
PM*

Consider selecting packs OFF, or APU bleed ON.

This will improve performance when using TOGA thrust.

In the case of a FLEX takeoff, selecting packs OFF or APU bleed ON will reduce takeoff EGT, and thus reduce maintenance costs.

The use of FLEX thrust may reduce maintenance costs. The effect is particularly significant with the first degrees of FLEX.

Use of APU bleed is not authorized, if wing anti-ice is to be used.

1.4 Meteorological Information

The weather report for Surabaya, issued on 21 July 2022, at 0622 LT was hazy, visibility was five kilometers and the wind was calm.

1.5 Aids to Navigation

Ground-based navigation aids/onboard navigation aids/aerodrome visual ground aids and their serviceability were not a factor in this occurrence.

1.6 Communications

All communications between air traffic controller and the pilot were recorded by ground based automatic voice recording equipment and Cockpit Voice Recorder (CVR) for the duration of the flight. The CVR also recorded the communication in the cockpit area. The quality of the audio recorded transmissions was good.

1.7 Aerodrome Information

Airport Name	: Juanda International Airport Surabaya
Airport Identification	: WARR
Airport Operator	: PT. Angkasa Pura I
Coordinate	: 07°22'51" S 112°47'11" E
Elevation	: 11 feet
Runway Direction	: 10/28
Runway Length	: 3,000 meters
Runway Width	: 45 meters
Surface	: Asphalt

1.8 Flight Recorders

The aircraft was fitted with Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR). Both recorders were transported to the KNKT facility for data download process.

The Flight Data Recorder (FDR) manufactured by L-3 Comm with part number 2100-4245-00 and serial number 1234913. The Cockpit Voice Recorder (CVR) manufactured by L-3 Comm with part number 2100-1020-02 and serial number 601810.

The FDR and CVR data successfully downloaded. The details of the FDR and CVR data will be included in the Final Report.

1.9 Medical and Pathological Information

The time of death of the PIC was unable to be determined as the postmortem external examination was not performed at the hospital.

1.10 Survival Aspects

About 0616 UTC, a minute after the aircraft was airborne, the SIC noticed that the PIC was in stiff position with the eyes wide open. Thereafter, the SIC called and tapped on PIC right thigh and the shoulder, however there was no response.

At 0617 LT, the SIC asked the FA via interphone to come into the cockpit and advised that the PIC was incapacitated. The FA1 found the PIC was unconscious, with both eyes closed and hands on the thigh. Then the FA1 slid the PIC's seat backward and reclined the seat, then release the shoulder harness and loosen the tie. The FA1 assumed the PIC was fainted as she was able to see the PIC's chest movement. The FA1 went back to the cabin to inform to the FA3 that the PIC was incapacitated and asked her to announce seeking any medical personnel on board the aircraft. The FA1 then came back into the cockpit brought aromatherapy oil to stimulate the PIC, hoping that the PIC would wake up, but it did not work.

At 0621 LT, a doctor entered the cockpit accompanied by FA3. The doctor examined the PIC and still detected spontaneous breathing, but the pulse was weak on the neck.

According to the doctor, the Glasgow Coma Scale (GCS)⁹ of the PIC was 3 (E1M1V1). The doctor asked for portable oxygen and then delivered by FA3 along with the EMK brought by FA2. The doctor put an airway tube on the PIC, then FA1 put on the oxygen mask, and the doctor set the oxygen flow to 4 liters per minute.

About 0637 LT, the doctor advised the FAs that the PIC breathing and pulse was no longer detected, and the light reflex of both pupils were negative. The doctor then instructed to the FA to lay down the PIC on the cockpit floor. The doctor prepared for resuscitation by positioning the PIC on the floor with legs raised up at the reclined seat. The doctor checked the airway was clear, no smell of alcohol, and no airway obstruction. The doctor then started to conduct chest compression without mouth to mouth breathing due to the situation of Covid-19 pandemic. During the resuscitation, the doctor was assisted by FA1 and FA2.

The air traffic services officer informed to the Airport Rescue and Fire Fighting (ARFF) personnel of pilot incapacitation. About 0640 LT, an airport aviation security officer came to policlinic of the Port Health Office of Surabaya to inform an incapacitated pilot of a flight, and the aircraft was approaching to land. About one minute later, the Citilink Operation personnel also called the Port Health Office personnel requesting for medical assistance.

About 0642 LT, the FA1 left the cockpit after hearing the sound of landing gear was being extended. The FA1 went back to the cabin for landing preparation. The doctor and FA2 continued resuscitating the PIC. The SIC made go around and the doctor and FA2 remained in the cockpit continued resuscitating.

At 0645 LT, the medical team of Port Health Office arrived at the apron.

At 0649 LT, the SIC informed that the aircraft was about to land and suggested the doctor and the FA2 to return the PIC to his seat. The doctor stopped the resuscitation. The FA3 came into the cockpit to assist returning the PIC to his seat and fastened the seatbelt on and locked the shoulder harness. The FA3 and the doctor returned to the cabin, while FA2 remained in the cockpit occupied the third pilot seat.

At 0656 LT, the aircraft landed on Runway 10, considering that the PIC required immediate assistance, the SIC decided to continue the taxi vacating the runway via Taxiway N6 then parked on Parking Stand 6 of the Terminal 1.

At 0710 LT, after the aircraft stopped and the forward cabin door was opened, the medical personnel of the airport entered the aircraft to examine the PIC condition. The medical team found the PIC unconscious on seating position with airway tube put on. The examination result was no pulse and oxygen saturation detected, pupils were mydriasis¹⁰, and the skin looked cyanotic¹¹.

⁹ The Glasgow coma scale (GCS) is a tool used to assess and calculate a patient's level of consciousness. It was developed more than 40 years ago by two neurosurgeons in Glasgow and is widely applied today. The GCS uses a triple criteria scoring system: best eye opening (maximum 4 points), best verbal response (maximum 5 points), and best motor response (maximum 6 points). These scores are added together to provide a total score between 3 and 15 ([Glasgow coma scale explained | The BMJ](#))

¹⁰ Mydriasis is dilation of the pupil of the eye, especially when excessive or prolonged, usually as a result of trauma, a medical disorder, or a drug. ([Mydriasis | definition of mydriasis by Medical dictionary \(thefreedictionary.com\)](#))

¹¹ Cyanotic is marked by bluish discoloration of the skin due to a lack of oxygen in the blood. It is one of the types of congenital heart disease. ([Cyanotic | definition of cyanotic by Medical dictionary \(thefreedictionary.com\)](#))

The medical team asked the Citilink Operation personnel to help evacuating the PIC to the ambulance using scoop stretcher.

At 0716 LT, the medical team brought the PIC using ambulance to hospital for further treatment. About 15 minutes later, the ambulance arrived at the hospital and received by the emergency unit personnel.

1.11 Tests and Research

No tests or research were required to be conducted as a result of this occurrence.

1.12 Organizational and Management Information

1.12.1 Aircraft Operator

Aircraft Owner : Alafco Irish Aircraft Leasing Eleven Limited

Aircraft Operator : PT Citilink Indonesia

Address : Komplek Juanda Bisnis Center (JBC) Blok C1 No.2 Jl. Raya Juanda Desa Sawotratap Kecamatan Gedangan Kabupaten Sidoarjo, Jawa Timur, Indonesia

AOC Number : AOC 121-046

The procedure and policy regarding pilot medical condition is described in the Citilink Operation Manual Part A (OM-A). The relevant subchapters were as follows:

1.12.1.1 Incapacitation of Crewmember

The OM Part A chapter 15 describes procedure when incapacitation of crewmember occurred during the flight operation. The subchapter 15.1 defined crewmember incapacitation as:

Crewmember incapacitation is defined as any condition which affects the health of crewmember during the performance of duties associated with the duty assigned to him/her which renders him/her incapable of performing assigned duties, either total or partial incapacitation which does not allow the fulfillment of duties in normal way.

The OM-A subchapter 15.2 describes type of incapacitation as follows:

(a) Obvious incapacitation;

Means total functional failure and loss of capabilities. In general will be easily detectable and of prolonged occurrence. Among possible causes are heart disorders severe brain disorders, internal bleeding, food poisoning, etc.

(b) Subtle incapacitation;

Is a more significant operational hazard, because it is difficult to detect and the effect can range from partial loss of function to complete unconsciousness. Among the possible causes might be minor brain seizures, hypoglycemia (low blood sugar), other various medical disorders, extreme fatigue or pre-occupation with personal problems. Because a flight crewmember may not be aware of, or capable of rationally evaluating his/her situation, this type of incapacitation is the more dangerous.

Causes and effects of incapacitation were defined as follows:

Incapacitation may range from minor cases of physiological upsets associated with inter-current mild disease or mental stress which may result in reduced levels of judgment or physical coordination up to a complete collapse.

Things that can cause mild incapacitation:

- *Body pain such as toothache, headache, gastroenteritis, delayed effects of alcohol, drug or medications, common disorder (i.e. cold).*
- *Heart trouble, an acute infection thrombosis, epilepsy, hypo-glycerin (extremely low level sugar) and others belong to the more serious causes of a sudden collapse.*

The OM-A subchapter 15.3 highlighted the keys to early recognition of incapacitation as follows:

Early recognition of incapacity is very important. A silent collapse shall hardly be detected during normal cruise phase, as communications may sometimes decline to minimum. This requires that all crewmembers monitor each other very closely.

“Closely” means observing other crewmember for any “abnormal” reaction, action and/or behavior. One good method is to use the term “two communication rule”, meaning that one crewmember’s comment must be answered by the other.

...

Other symptoms of the beginning of an incapacitation are:

- *Incoherent speech;*
- *Strange behavior;*
- *Irregular breathing;*
- *Pale fixed facial expression;*
- *Jerky motions that are either delayed or too rapid.*

If any of these are present, incapacitation must be suspected and action taken to check the state of a crewmember.

The OM-A subchapter 15.4 describes action to be taken when pilot incapacitate as follows:

First Phase

1. *Assure a safe condition of flight*
2. *Take over the controls immediately.*
3. *Ensure that autopilot is engaged.*
4. *Declare an emergency to ATC*
5. *Call Flight Attendant via PA : “FA-1 REPORT TO COCKPIT”*
6. *Take whatever steps are possible to ensure the incapacitated pilot cannot interfere with the handling of the aircraft. This may include involving flight attendant to restrain the incapacitated pilot:*

- a) *Pull pilot seatback by shoulders, if possible recline seat.*
 - b) *Fasten shoulder harness, secure pilot arms inside harness.*
 - c) *Lock shoulder harness by moving the locking lever.*
 - d) *Bring seat away from the control and around to ward the side window until seat clicks into locked position.*
 - e) *Take pilot seat off pedals.*
 - f) *Be prepared to administer oxygen (quick donning oxygen system), if needed.*
 - g) *Be ready for flight crew orders.*
7. *Request assistance from any medically qualified passenger and take necessary step(s) to help the incapacitated flight crew.*
 8. *Check if a type qualified pilot is onboard to replace the incapacitated crewmember. If no type qualified pilot is available, 1 (one) Flight Attendant other than Flight Attendant-1 (FA-1), should remain in the cockpit.*
Note: FA-1 shall brief other flight attendant to ensure that all exits are covered (in certain case, 1 flight attendant will have to handle 2 doors) and give their new assignment (applicable for A330 & A320).
 9. *Land at the nearest suitable airport after considering all pertinent factors.*
 10. *Request medical assistance after landing giving many details about the condition of the affected crewmember.*
 11. *The remain cockpit crew shall wear seatbelts and harnesses at all times.*

Second Phase

1. *Prepare the approach preparation earlier.*
2. *Request radar vectoring and prefer a long approach to reduce workload if possible.*
3. *Perform the landing from the fit pilot usual seat.*

The Operation Manual Part B2 (OM-B2) subchapter 10.8 described incapacitation of crew member as follows

10.8.1 General

Incapacitation of a crewmember is defined s any condition, which affect the health of a crew member during the performance duties which render him/her incapable of performing the assigned duties. Incapacitation is a real air safety hazard, which occurs more frequently than many of the other emergencies, which are subject of routine training. Incapacitation can occur in many forms varying from obvious sudden death to subtle, partial loss of function. It occurs in all age groups and during all phases of flight and may not be preceded by any warning.

The types of incapacitation, causes and effects and recognition description mentioned in the OM-B2 have same content with the OM-A. The OM-B2 subchapter 10.8.5 described procedure of flight crew incapacitation as follows:

The recovery from a detected incapacitation of the fit pilot shall follow the sequence below:

PIC will call flight attendant via PA: "FA-1 REPORT TO COCKPIT"

Flight Attendant duties:

1. *Take whatever steps are possible to ensure the incapacitated pilot cannot interfere with the handling of the aircraft:*
 - a. *Pull pilot seatback by shoulder, if possible recline seat.*
 - b. *Fasten shoulder harness, secure pilot arms inside harness.*
 - c. *Lock shoulder harness by moving the lock lever.*
 - d. *Bring seat away from the control and around toward the side window until seat clicks into locked position.*
 - e. *Take pilot seat off pedals'*
 - f. *Be prepared to administer oxygen (quick donning oxygen mask), if needed.*
 - g. *Be ready for flight crew orders.*
2. *Request assistance from any medically qualified passenger and take necessary step(s) to help the incapacitated flight crew.*
3. *Check if a type qualified pilot is onboard to replace the incapacitated crew member. If no type qualified pilot available, 1 (one) flight attendant other than FA-1 should remain in the cockpit (A330 & A320).*

Note: FA-1 shall brief other flight attendants to ensure that all exits are covered (in certain case, 1 flight attendant will have to handle 2 doors) and give their new assignment.

1.12.2 Regulations Related to Decrease of Medical Fitness

Civil Aviation Safety Regulation (CASR) Part 67 First Edition subpart 15 describes as follows:

Holders of licenses provided for in this Part shall not exercise the privileges of their licenses and related ratings at any time when they are aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.

1.13 Additional Information

The investigation is continuing and KNKT plans to complete the investigation within 12 months since the day of the occurrence. 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.

1.14 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

The 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.

1. The aircraft had valid Certificate of Airworthiness (C of A) and Certificate of Registration (C of R).
2. Both pilots and all the flight attendants held valid licenses and medical certificates.
3. The last medical examination of the PIC showed an overweight condition and the cholesterol was higher than the standard. After receiving medical education related to the overweight and high cholesterol level, the PIC was granted a First-Class medical certificate which would valid until 8 December 2022.
4. The PIC did not show any illnesses indication prior to the flight.
5. The CASR part 67 subpart 15 described that crewmember should be aware of any decrease in their medical fitness which might render them unable to safely and properly exercise these privileges.
6. A minute after the aircraft was airborne, the SIC noticed that the PIC was in stiff position, the SIC attempted to check the PIC consciousness and was no response.
7. The SIC called the Flight Attendant (FA) asked the FA1 to come to the cockpit and afterward informed that the PIC was incapacitated. The FA1 saw the PIC was unconscious and assumed the PIC was fainted as she was able to see the PIC's chest movement.
8. The FA1 went back to the cabin to inform to the FA3 that the PIC was incapacitated and asked her to announce seeking any medical personnel on board the aircraft. The FA1 then came back into the cockpit brought aromatherapy oil to stimulate the PIC, hoping that the PIC would wake up, but it did not work.
9. The SIC declared urgency message PAN PAN to the Citilink Operation and TMA controller informed that the PIC was incapacitated and planned to return to Surabaya.
10. The SIC requested an ambulance and ground support for electrical power and air conditioning as the Auxiliary Power Unit (APU) of the aircraft was unserviceable.
11. A medical doctor came to the cockpit accompanied by FA3. The doctor examined the PIC and still detected spontaneous breathing, but the pulse was weak on the neck. According to the doctor, the Glasgow Coma Scale (GCS) of the PIC was 3 (E1M1V1).

12. The doctor asked for portable oxygen, then put an airway tube before putting the oxygen mask and set the oxygen flow to 4 liters per minute.
13. When the PIC breathing and pulse were no longer detected, the doctor instructed to lay down the PIC on the cockpit floor to conduct resuscitation. The doctor examined and found that the airway was clear, no smell of alcohol, and no airway obstruction.
14. During the landing approach to Runway 28, at altitude about 2,000 feet, the SIC decided to make a go around considering that the flight was un-stabilize and the doctor with the FA2 were still resuscitating the PIC.
15. The SIC made the ILS approach Runway 10 and informed to the doctor and FA2 that the PIC should be returned to his seat as the aircraft was about to land.
16. After putting the PIC on his seat with seatbelt on and shoulder harness locked, the FA3 and the doctor returned to the cabin, while FA2 remained in the cockpit on the third pilot seat to make sure the PIC was well guarded.
17. Since the PIC had incapacitated, the SIC flying the aircraft by himself including read and performed the checklist.
18. The aircraft landed on Runway 10 and considering that the PIC required immediate assistance, then the SIC decided to continue taxi to the parking stand.
19. After the aircraft stopped and the forward cabin door was opened, the medical personnel of the airport entered the aircraft to examine the PIC condition. The PIC then transported to a hospital. The PIC was found death upon arrival at the hospital and the time of death was unknown.

3 SAFETY ACTION

At the time of issuing this Preliminary Report, the KNKT had not been informed of any safety actions resulting from this occurrence.

4 SAFETY RECOMMENDATIONS

At the time of issuing this Preliminary Report, KNKT had not issued any safety recommendation. 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.

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