KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA

FINAL

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Aircraft Serious Incident Investigation Report

PT. Citilink Indonesia

Airbus A320-200; PK-GLH

and

PT. Citilink Indonesia

Airbus A320-200; PK-GTA

Near Waypoint EMARA, Surabaya Airspace

Republic of Indonesia

17 January 2018

2022

This Final 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).

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Jakarta, 22 March 2022
KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN

SOERJANTO TJAHJONO

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ABBREVIATIONS AND DEFINITIONS

AC	:	Advisory Circular
AOC	:	Air Operator Certificate
ATC	:	Air Traffic Control
ATS	:	Air Traffic Service
CANSO	:	Civil Air Navigation Services Organization
CTR	:	Control Zone
DGCA	:	Directorate General of Civil Aviation
FL	:	Flight Level
ICAO	:	International Civil Aviation Organization
IFATCA	:	International Federation of Air Traffic Controllers Association
KNKT	:	Komite Nasional Keselamatan Transportasi
STCA	:	Short-Term Conflict Alert
TCAS RA	:	Traffic Collision Avoidance System Resolution Alert
TMA	:	Terminal Control Area
T-SOP	:	Temporary Standard Operating Procedures

SYNOPSIS

On 17 January 2018, two Airbus A320-200 aircraft registered PK-GLH and PK-GTA were being operated by PT. Citilink Indonesia (Citilink) as a scheduled passenger flight to Juanda International Airport (WARR), Surabaya. The PK-GLH departed from Supadio International Airport, Pontianak with flight number CTV878 and the PK-GTA departed from Sultan Aji Muhammad Sulaiman International Airport (WALL), Balikpapan with flight number CTV635. On board on both flights were the same composition of two pilots, four flight attendants and 180 passengers.

The flights from departure until commenced approach to Surabaya were uneventful and there were no record or report of aircraft system malfunction during the flight.

Both aircraft entered Surabaya East Terminal Control Area (TMA East) and the provision of air traffic services in TMA East was utilizing surveillance system (radar service). Both aircraft were instructed to hold over Waypoint EMARA at same altitude of 20,000 feet.

At 18:31:49 LT, the horizontal separation of both aircraft reduced from 5 nm while the vertical separation was about 200 Nm and continued reducing. The Traffic Collision Avoidance System Resolution Alert (TCAS RA) of both aircraft were active, and thereafter the horizontal and vertical separation was increasing. The rest of flights were uneventful and both aircraft landed using runway 18. The aircraft was undamaged and there was no injury to person.

The investigation highlights safety issue of workload of the air traffic controller that can impair alertness and ability to perform safety-related duties. The ATS Provider had provided means to help controller increasing their alertness during duty, including the safety net of the surveillance system, the availability of assistant and watch supervisor for the controller. However, the potential conflict between the aircraft was undetermined until one of the pilots confirmed a traffic on their right side.

At the time of issuing this report, the Komite Nasional Keselamatan Transportasi had been informed of safety actions taken by the Directorate General of Civil Aviation and AirNav Indonesia.

1 FACTUAL INFORMATION

1.1 History of the Flight

On 17 January 2018, two Airbus A320-200 aircraft registered PK-GLH and PK-GTA were being operated by PT. Citilink Indonesia (Citilink) as a scheduled passenger flight to Juanda International Airport (WARR), Surabaya[1]. The PK-GLH departed from Supadio International Airport, Pontianak with flight number CTV878 and the PK-GTA departed from Sultan Aji Muhammad Sulaiman International Airport (WALL), Balikpapan with flight number CTV635.

On board on both flights were the same composition of two pilots, four flight attendants and both flights had 180 passengers.

The flights from departure until commenced approach to Surabaya were uneventful and there were no record or report of aircraft system malfunction during the flight.

Both aircraft entered Surabaya East Terminal Control Area (TMA East) and the provision of air traffic services in TMA East was utilizing surveillance system (radar service).

At 0930 UTC (1630 LT[2]), the runway in Surabaya was closed due to maintenance and was reopened at 1655 LT. Several departure and arrival flights were delayed. After the runway was reopened, the weather condition over Surabaya was heavy rain. Several aircraft were holding on different holding points.

At 1821 LT at night condition, the CTV878 pilot made initial contact with Surabaya TMA East controller (controller) and informed that the flight passed altitude of 28,000 feet. The controller instructed to descend to altitude of 19,000 feet for approach Runway 28 and to hold over Waypoint EMARA[3]. About two minutes later, the controller revised the instruction to CTV878 pilot to descend and maintain altitude of 20,000 feet.

At 1825 LT, the CTV635 pilot made initial contact with the controller and was instructed to maintain altitude of 21,000 feet. The controller also instructed the CTV635 pilot to hold over Waypoint EMARA. After this communication, the controller communicated with another pilot (CTV661) providing instruction to descend to FL140. The CTV661 also flew towards Waypoint EMARA for holding.

At 1826 LT, the CTV878 pilot advised the controller that the flight approached Waypoint EMARA and confirmed whether the pilot was instructed to make holding over Waypoint EMARA. The controller affirmed and instructed to maintain altitude of 14,000 feet to the CTV661 pilot. The CTV878 pilot then advised that the call was from CTV878. Afterwards, the controller instructed the CTV878 to maintain altitude of 20,000 feet and hold over waypoint EMARA. The CTV878 pilot read back the instruction and confirmed whether using left or right pattern. The controller responded to use right pattern with inbound holding direction of 190° and the CTV878 pilot read back the instruction. The audio record of this communication did not indicate any reducing audio communication quality.

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

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

3 Waypoint EMARA is located about 40 Nm on bearing 050 from Surabaya.

At 1829 LT, the CTV635 pilot advised the controller that the aircraft approached altitude of 21,000 feet. The controller instructed the CTV635 pilot to descend to altitude of 20,000 feet and hold over Waypoint EMARA. At this time, the controller handled five aircraft in total (green label in figure 1) which four aircraft included CTV878 was holding near Waypoint EMARA and the CTV635 about 23 Nm North West of Waypoint EMARA.

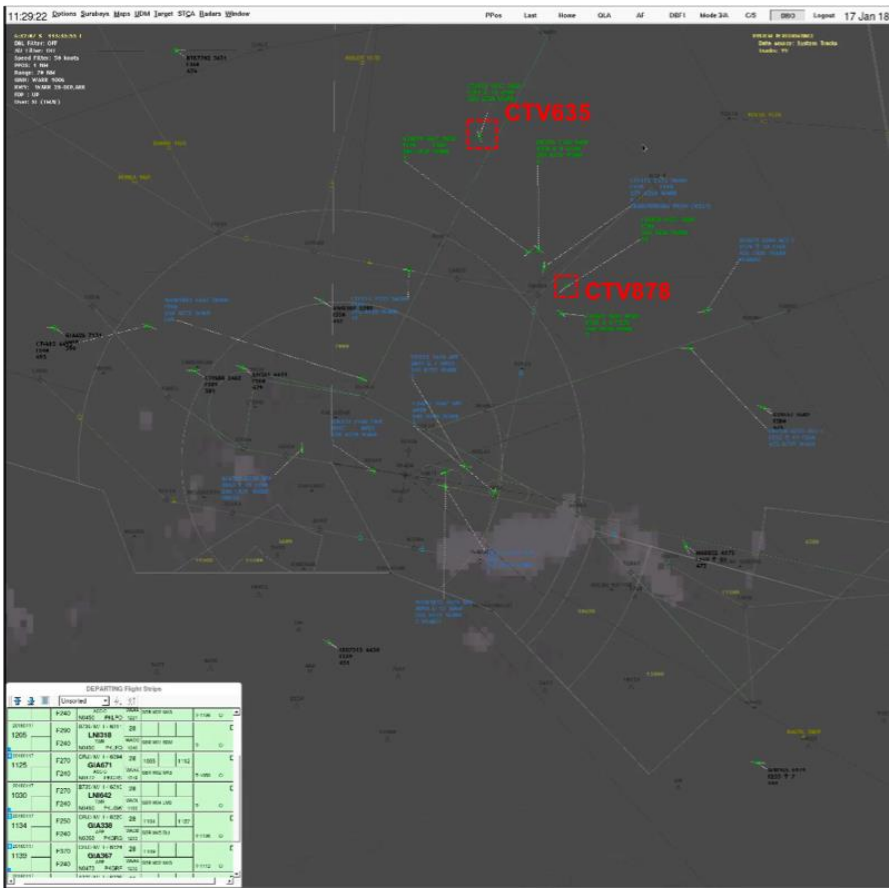

Figure 1: The traffic situation when controller instructed CTV635 to descend to FL200

At 18:31:49 LT, the horizontal separation of both aircraft reduced from 5 nm while the vertical separation was about 200 Nm and continued reducing.

At 18:32:06 LT, the CTV878 pilot confirmed the controller whether there was traffic about 5 Nm on their right side. The TMA East controller responded:

> *"INDONESIA sorry, CITILINK SIX THREE FIVE immediate left turn, sorry right turn heading to descend to ONE EIGHT ZERO right turn heading TWO FIVE ZERO"*

The CTV878 pilot advised the controller that the pilot received Traffic Collision Avoidance System Resolution Alert (TCAS RA). The controller then instructed the CTV878 pilot to turn the aircraft to the right and maintain altitude of 20,000 feet. The CTV878 pilot re-advised the controller that the pilot receiving TCAS RA, and the controller acknowledged the TCAS RA. After the activation of the TCAS RA, the horizontal distance and the vertical separation were increasing.

At 18:32:48 LT, the controller instructed the CTV635 pilot to descend to altitude of 18,000 feet and the pilot read back the instruction.

At 18:32:54 LT, the controller confirmed the CTV878 pilot whether the aircraft was descended to altitude of 18,000 feet and the pilot responded that the aircraft was maintained at altitude of 20,000 feet.

At 18:33:02 LT, the controller confirmed the CTV635 pilot whether the aircraft heading was maintained to waypoint EMARA, and the pilot responded that the aircraft was turned to the right on heading 250°.

At 18:33:13 LT, the CTV878 pilot advised the controller that he followed the TCAS RA by descending the aircraft to altitude of 18,000 feet and the controller acknowledged. About six second later the CTV878 pilot confirmed to the controller whether the intruder traffic was also descended. The controller instructed the CTV878 to standby and then instructed the CTV635 pilot to turn right the aircraft on heading 250° and maintain the altitude on FL200. The CTV635 pilot read back the instruction and advised the controller that the pilot received TCAS RA.

At 18:34:22 LT, the CTV878 pilot advised the controller that the aircraft was maintained at altitude of 18,000 feet and based on the TCAS, the conflict was clear. The TMA East controller instructed to maintain at FL180 and hold over waypoint EMARA.

At 18:33:50 LT, the CTV635 pilot advised the controller that the pilot received CLEAR OF CONFLICT message from TCAS, and the aircraft was maintaining at altitude of 20,000 feet. The TMA East instructed the CTV635 pilot to maintain the aircraft heading and altitude.

At 18:34:31 LT, the CTV878 pilot advised the controller that the pilot received CLEAR OF CONFLICT message from TCAS, and the aircraft was maintaining at altitude of 18,000 feet over EMARA. The TMA East controller instructed the CTV878 pilot to maintain at altitude of 18,000 feet and hold over waypoint EMARA.

The rest of flights were uneventful and both aircraft landed using runway 18. The aircraft was undamaged and there was no injury to person.

1.2 Personnel Information

1.2.1 Pilot

The pilots of CTV878 and CTV635 are Indonesian and qualified Airbus A320-200 aircraft pilot who had valid license and medical certificate.

1.2.2 Air Traffic Controller

The air traffic controller is Indonesian and qualified approach radar controller who had valid air traffic control license and medical certificate. The controller had working experience as air traffic controller for more than 15 years.

At the day of the occurrence, the controller on had been on duty for 1 hours 50 minutes and the occurrence happened about 30 minutes before the change of duty.

In the last 30 minutes prior to the occurrence, the controller had provided air traffic control service for 10 aircraft. Most of the traffic was arrival aircraft which was holding in non-standard holding pattern due to weather condition. The controller advised that ever handled the same traffic condition before without any occurrence.

During the occurrence, the controller was assisted by one assistant controller who also assisted the other controller of the other sector (TMA East) and supervised by one watch supervisor. The controller did not aware the potential conflict between the aircraft until the CTV878 pilot confirmed a traffic on their right side.

1.2.3 Assistant Controller

The assistant controller is Indonesian and qualified approach radar controller who had valid air traffic control license and medical certificate. The assistant controller had working experience as air traffic controller for more than 15 years.

The assistant was assigned to assist the controller working position of the TMA East due to that sector was often have more traffic than the TMA West. Prior to the occurrence, the assistant controller did not aware of the potential conflict between the CTV878 and CTV635.

1.2.4 Controller's Watch Supervisor

The watch supervisor is Indonesian and qualified approach radar controller who had valid air traffic control license and medical certificate. The watch supervisor had working experience as air traffic controller for more than 15 years.

The watch supervisor had dedicated controller working position to monitor the duty of controllers in three different sectors – Control Zone (CTR), East Terminal Control Area (TMA East) and West Terminal Control Area (TMA West).

The watch supervisor was aware that prior to the occurrence, the controller several times provided response to wrong pilot, and there was no action taken by the watch supervisor. Prior to the occurrence, the watch supervisor did not aware of the potential conflict between the CTV878 and CTV635.

1.3 Organizational and Management Information

1.3.1 Aircraft Operator

Both aircraft that experienced aircraft proximity were operated by PT. Citilink Indonesia (Citilink) which held a valid Air Operator Certificate (AOC) number 121-046.

1.3.2 Air Traffic Service Provider

The Air Traffic Service (ATS) in Surabaya is provided by *Perusahaan Umum Lembaga Penyelenggara Pelayanan Navigasi Penerbangan Indonesia* (AirNav Indonesia) branch office Surabaya. The ATS Provider held a valid Air Traffic Services provider certificate. The services provided were aerodrome control service; approach control service; aeronautical communication service; and flight information services.

The approach control service is provided by the Surabaya approach control unit and utilizing surveillance control (radar service). The Surabaya approach control unit divided the jurisdiction into three sectors – Control Zone (CTR), East Terminal Control Area (TMA East) and West Terminal Control Area (TMA West).

The ATS Provider had provided means to help controller increasing their alertness during duty, including the safety net of the surveillance system, the availability of assistant and watch supervisor for the controller.

1.3.3 Surveillance System within Surabaya Airspace

At the day of the occurrence, the Short-Term Conflict Alert (STCA) was deactivated due to the system provided false STCA. It was because misalignment of one of the radar head created duplication of some aircraft target.

According to the Temporary Standard Operating Procedures (T-SOP) of Airnav Indonesia branch office Surabaya the horizontal separation minimum when utilizing surveillance (radar) was 5 Nm.

1.3.4 Indonesia Regulation for Separation Standard

The Indonesia Advisory Circular (AC) 170-02: Manual of Air Traffic Services Operational Procedures subchapter 5.3 mentioned that the vertical separation minimum shall be a nominal 1,000 feet below Flight Level (FL) 290 (altitude 29,000 feet).

When surveillance systems are being used (e.g. based on radar), the horizontal separation minimum prescribed by the AC 170-02 was 5 Nm, unless otherwise stated by the appropriate ATS authority.

1.4 Additional Information

1.4.1 Human Performance Consideration

International Civil Aviation Organization (ICAO) Document 9966 described fatigue as follows:

> *A physiological state of reduced mental or physical performance capability resulting from sleep loss or extended wakefulness, circadian phase, or workload (mental and/or physical activity) that can impair a crew member's alertness and ability to safely operate an aircraft or perform safety-related duties.*

Fatigue Management Guide for Air Traffic Service Providers[4] chapter 2 described that workload can contribute to an individual's level of fatigue for instance a high workload may exceed the capacity of a fatigued individual which resulted in performance degradation. In addition, chapter 3.3.1 described that a fatigue management relies on identification of fatigue hazards and effective safety reporting. The issues associated to the fatigue would be difficult to detect if people are unwilling or unable to report them. Therefore, it must be acceptable to raise legitimate issues about fatigue without fear of retribution or punishment from both within and outside organization. The chapter 3.3.1 also mentioned that to encourage an outgoing commitment by staff to reporting fatigue hazards voluntarily (as opposed to mandatory reports), the ATS provider should:

- *Have clear processes for fatigue hazard reporting.*
- *Be clear that the organization expects ATCs to report fatigue hazards.*
- *Establish a process for what to do when an ATC considers themselves too fatigued to perform safety-critical tasks to an acceptable standard.*
- *Identify the implications for individuals of submitting a fatigue hazard report.*

4 This document developed by ICAO, International Federation of Air Traffic Controllers Association (IFACTA), and Civil Air Navigation Services Organization (CANSO), and can be accessed in the following link https://www.unitingaviation.com/publications/FM-Guide-Air-Traffic-SP/.

- *Identify how the organization will respond to reports of fatigue hazards, including acknowledging receipt of reports and providing feedback to ATCs who report.*
- *Take appropriate actions in response to fatigue reports consistent with stated policy.*
- *Maintain the integrity of the safety reporting system and reporter confidentiality.*
- *Provide feedback to ATCs on changes made in response to identified fatigue hazards.*

1.5 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 SAFETY MESSAGES

The Indonesia Advisory Circular (AC) 170-02: Manual of Air Traffic Services Operational Procedures subchapter 5.3 mentioned that the vertical separation minimum shall be a nominal 1,000 feet below Flight Level (FL) 290. When surveillance systems are used (e.g., based on radar), the horizontal separation minimum prescribed by the AC 170-02 was 5 Nm.

One aircraft was instructed to hold over Waypoint EMARA and maintained at FL200, while the other aircraft was instructed to descend the same altitude at FL200 and also instructed to hold over the same waypoint. The air traffic control service provided to those aircraft was utilizing surveillance system (radar service). The potential conflict between the aircraft was undetermined until one of the pilots confirmed a traffic on their right side.

The controller has more than 15 years' experience as air traffic controller. At the day of the occurrence, the controller on had been on duty for 1 hours 50 minutes and had provided air traffic control service for more than 10 aircraft. Most of the traffic was arrival aircraft which was holding in non-standard holding pattern due to weather condition.

The ATS Provider had provided means to help controller increasing their alertness during duty, including the safety net of the surveillance system, the availability of assistant and watch supervisor for the controller.

The controller on duty was assisted by one assistant controller who also assisted the other controller of the other sector and supervised by one watch supervisor who also supervised the two other sectors. Neither the assistant nor the watch supervisor was not aware of the potential conflict between the aircraft. The watch supervisor was aware that prior to the occurrence, the controller ever provided response to wrong pilot, and there was no action taken by the watch supervisor.

At the day of the occurrence, the Short-Term Conflict Alert (STCA) as one of the safety nets provided by the surveillance system was deactivated due to technical reason. The availability of other means to increasing controller alertness during duty also became issue that need to be considered.

According to the International Civil Aviation Organization (ICAO) Document 9966, described that alertness and ability to perform safety-related duties can be impaired by several aspect including workload (mental and/or physical activity). In addition, Fatigue Management Guide for Air Traffic Service Providers developed by ICAO, International Federation of Air Traffic Controllers Association (IFACTA), and Civil Air Navigation Services Organization (CANSO) described that a high workload may exceed the capacity of a fatigued individual which resulted in performance degradation.

The Fatigue Management Guide for Air Traffic Service Providers described that a fatigue management relies on identification of fatigue hazards and effective safety reporting. The issues associated to the fatigue would be difficult to detect if people are unwilling or unable to report them. Therefore, it must be acceptable to raise legitimate issues about fatigue without fear of retribution or punishment from both within and outside organization.

The full document of the Fatigue Management Guide for Air Traffic Service Providers can be accessed in the following link:
https://www.unitingaviation.com/publications/FM-Guide-Air-Traffic-SP/.

3 SAFETY ACTION

At the time of issuing this report, the *Komite Nasional Keselamatan Transportasi* had been informed of safety actions taken by related parties as follows:

3.1 Directorate General of Civil Aviation

Directorate General of Civil Aviation (DGCA) conducted safety meeting for aircraft proximity event every three months in order to determine the safety issue and its corrective safety actions.

On 11 April 2018, the DGCA reviewed the occurrence and reminded the involved parties to implement the requirement standard and improve the awareness during their duty.

3.2 AirNav Indonesia

Following the occurrence, the AirNav Indonesia branch office Surabaya had conducted safety action as follows:

1. optimized the function of watch supervisor to assist controller especially during high workload situation, and
2. ensured that the Short-Term Conflict Alert (STCA) will be provided during the provision of Air Traffic Services and provided mitigation when the safety net was unable to be provided by the system.

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