



**KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA**

PRELIMINARY

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Aircraft Accident Investigation Report

PT. Batik Air Indonesia

Airbus A320; PK-LZJ

Sultan Hasanuddin International Airport

Republic of Indonesia

25 May 2019

2019

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

The report is based upon the initial investigation carried out by the KNKT in accordance with Annex 13 to the Convention on International Civil Aviation Organization, the Indonesian Aviation Act (UU No. 1/2009) and Government Regulation (PP No. 62/2013).

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

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Jakarta, August 2018
**KOMITE NASIONAL
KESELAMATAN TRANSPORTASI
CHAIRMAN**


SOERJANTO TJAHHJONO

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ABBREVIATIONS AND DEFINITIONS

AAS	:	Angkasa Aviasi Servis
AMC	:	Apron Movement Control
AOC	:	Air Operator Certificate
ATS	:	Air Traffic Services
ATT	:	Aircraft Towing Tractor
CASR	:	Civil Aviation Safety Regulation
CB	:	Circuit Breaker
CVR	:	Cockpit Voice Recorder
DGCA	:	Directorate General of Civil Aviation
ERM	:	Eergency Response Manual
EWIS	:	Electrical Wiring Interconnection System
FDR	:	Flight Data Recorder
ICAO	:	International Civil Aviation Organization
KNKT	:	<i>Komite Nasional Keselamatan Transportasi</i> /National Transportation Safety Committee
LMPM	:	Line Maintenance Procedure Manual
LT	:	Local Time
MATSC	:	Makassar Air Traffic Services Center
MEL	:	Minimum Equipment List
OCC	:	Operational Control Center
OM-part A	:	Operation Manual Part A
PIC	:	Pilot in Command
SIC	:	Second in Command
SSQ	:	Batik Air Safety, Security and Quality
UTC	:	Universal Time Coordinated
WI	:	Working Instruction

SYNOPSIS

On 25 May 2019, an Airbus A320 aircraft registered PK-LZJ was being operated on a scheduled passenger flight from Sultan Hasanuddin International Airport (WAAA), Makassar to Mopah International Airport (WAKK), Merauke. On board the aircraft were two pilots, five flight attendants and 82 passengers.

At 1841 UTC (0241 LT) on early morning (night) time, the Makassar Tower controller issued pushback clearance to heading south to the pilot. The Second in Command (SIC) readback the clearance and the Pilot in Command (PIC) relayed the instruction to the headset-man using intercom. The headset-man then advised the towing tractor driver using hand signal that the clearance was push back to heading south.

At 0242 LT, the aircraft commenced pushback from stand B1. The push back operation used towing tractor with the crew consisted of towing tractor driver, a wing-man and a headset-man who performed by a mechanic. The towing tractor head lights and rotating beacon light located above the driver compartment and the aircraft navigation light were illuminated during the pushback operation. The towing tractor driver and wing-man used high visibility vest while the headset-man used company uniform without any fluorescence strip or high visibility vest.

A few meters after following the straight lead-in line, the towing tractor driver maneuvered the towing tractor to the left in order to turn the aircraft facing north. This maneuver made the aircraft out of the straight lead-in line provided with intention to maneuver aircraft to face south west.

During the pushback maneuver and when the towing tractor was on the right side of the aircraft, the aircraft nose wheel passed over the right foot of the headset-man. The towing tractor driver felt a bump and noticed that the headset-man fell down on the ground. The towing tractor driver stopped the towing tractor when the aircraft was facing west and the nose wheel was facing north.

The headset-man evacuated to the nearest hospital for medical treatment and found sustaining fracture on his right tarsometatarsal.

After performed aircraft visual check and no damage found on the aircraft, the aircraft continued the taxi and departed using runway 03 at 0301 LT and arrived at the destination aerodrome uneventfully.

At the time of issuing this Preliminary Report, the KNKT had been informed of safety actions taken by the Batik Air resulting from this occurrence. However, there still remain safety issues that need to be considered. Therefore, the KNKT issues the following safety recommendations addressed to the Batik Air, Batam Aero Technic, Angkasa Aviasi Servis and Angkasa Pura I.

The KNKT issued safety recommendations to address safety issues identified in this report to the Batik Air, Batam Aero Technic, Angkasa Aviasi Servis and Angkasa Pura I.

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 FACTUAL INFORMATION

1.1 History of the Flight

On 25 May 2019, an Airbus A320 aircraft registered PK-LZJ was being operated on a scheduled passenger flight from Sultan Hasanuddin International Airport (WAAA), Makassar to Mopah International Airport (WAKK), Merauke. On board the aircraft were two pilots, five flight attendants and 82 passengers. The Pilot in Command (PIC) acted as Pilot Flying and the Second in Command (SIC) acted as Pilot Monitoring.

After the passenger boarding completed, the aircraft was ready for push back. The SIC then requested push back clearance to the Makassar Tower controller.

At 1841 UTC (0241 LT¹) on early morning (night) time, the Makassar Tower controller issued pushback clearance to heading south to the pilot. This heading south clearance was a simplify term to communicate since the actual heading south clearance would be south west. The SIC readback the clearance and the PIC relayed the instruction to the headset-man using intercom. The headset-man then advised the towing tractor driver using hand signal that the clearance was push back to heading south.

At 0242 LT, the aircraft commenced pushback from stand B1 and the aircraft was on heading north-westerly. The push back operation used towing tractor with the crew consisted of towing tractor driver, a wing-man and a headset-man who performed by a mechanic. The towing tractor driver maneuvered the towing tractor straight back along the yellow line (straight lead-in line) with the wing-man was on the left side and the headset-man was on the right side of the towing tractor driver. The towing tractor was left-hand drive (the steering wheel on the left side).

During the pushback, the towing tractor head lights and rotating beacon light located above the driver compartment and the aircraft navigation light were illuminated. The towing tractor driver and wing-man used high visibility vest while the headset-man used company uniform without any fluorescence strip or high visibility vest.

A few meters after following the straight lead-in line, the towing tractor driver maneuvered the towing tractor to the left in order to turn the aircraft facing north. This maneuver made the aircraft out of the straight lead-in line provided with intention to maneuver aircraft to face south west. The towing tractor driver considered that if the offset lead-in line was followed, the aircraft maneuver would be too close to the service road (see subchapter 1.10 for the detail apron layout).

During maneuvering and when the aircraft was facing north, the wing-man moved to the right side of the towing tractor to observe the left wing and the tail of the aircraft as there was an aircraft parked on stand 37. The headset-man was on the right side of the towing tractor driver and was walking faced to the aircraft to observe the aircraft engine starting process.

¹ 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) +8 hours.

The right engine had been started without any abnormality and the headset-man would continue to monitor the starting process of left engine. The aircraft was facing north and the towing tractor driver continued the maneuver straight then turned right to make the aircraft facing south. During the turning maneuver and when the towing tractor was on the right side of the aircraft, the aircraft nose wheel passed over the right foot of the headset-man. The towing tractor driver felt a bump and noticed that the headset-man fell down on the ground. The towing tractor driver stopped the towing tractor when the aircraft was facing west and the nose wheel was facing north.

When the aircraft stopped, the PIC attempted to call the headset-man via intercom and no answer. The wing-man which also noticed that the headset-man fell down on the ground then ran to the ground support agent office to report the occurrence and asked for medical assistance for the headset-man.

The engineer group leader on duty arrived to the occurrence site then took over the duty of headset-man. The engineer group leader advised the PIC of the occurrence who then responded to check the aircraft condition.

The visual observation to the right foot of headset-man indicated that there was possibility of bone fracture. The headset-man evacuated to the nearest hospital for medical treatment using Batik Air operational car.

At 0244 LT, the SIC requested to the Makassar Tower controller to hold on present position and advised that there was problem with the towing tractor, the request was approved. After performed aircraft visual check and no damage found on the aircraft, the engineer group leader suggested the PIC to continue the flight which was agreed. The engineer group leader considered the occurrence was not mandatory occurrence to be reported as there was no defect on the aircraft.

At 0249 LT, the SIC advised to the Makassar Tower controller that the aircraft was ready to continue the pushback and it was approved. The towing tractor driver and wing-man continued the duty while the role of the headset-man was replaced by the engineer group leader. The towing tractor driver continued to maneuver by pushing forward the aircraft until reach the yellow taxiway guideline.

At 0253 LT, after pushback completed, the SIC requested taxi clearance to the Makassar Tower controller and was instructed to taxi to runway 03. The aircraft taxied and departed using runway 03 at 0301 LT. The aircraft continued to fly and arrived at the destination aerodrome uneventfully. After landed the PIC filed occurrence report to the Batik Air Operation Department and the Safety, Security and Quality (SSQ) Department. The Komite Nasional Keselamatan Transportasi (KNKT) was notified of the occurrence by the Batik Air SSQ Department after the PK-LZJ departed from Makassar.

1.2 Injuries to Persons

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	1
Minor	-	-	-	Not applicable
None	7	82	89	Not applicable
TOTAL	7	82	89	1

The serious injured headset-man is Indonesian. The headset-man sustained fracture on his right tarsometatarsal. On 25 May 2019, after the accident, the headset-man was evacuated to hospital and was hospitalized until 29 May 2019.

1.3 Damage to Aircraft

The aircraft was undamaged.

1.4 Other Damage

No other damage to property and/or the environment in this accident.

1.5 Personnel Information

1.5.1 Pilot in Command

Both pilots are Indonesian and had valid license with qualification as Airbus A320 aircraft pilot. The PIC had valid first-class medical certificate with limitation to wear lenses that correct for distant vision and possess glasses that correct for near vision. The SIC had valid first-class medical certificate without any limitation.

The total flying hours of the PIC on Airbus A320 was 2,588 hours while the SIC was 3,840 hours.

1.5.2 Air Traffic Controller

The air traffic controller had valid license and rating to perform aerodrome control service in Makassar Tower unit. The controller also had valid third class medical certificate without any limitation.

1.5.3 Towing Tractor Driver

The towing tractor driver is Indonesian, 43 years old, had valid Ground Support Equipment license and rating to drive Aircraft Towing Tractor (ATT). The towing tractor driver had 7 years experienced as ATT driver.

At the day of the accident, the towing tractor driver arrived in the airport about 2215 LT for night shift from 2300 to 0730 LT. Prior to the accident, the towing tractor driver had performed duty for push back two aircraft from parking stand other than B1.

1.5.4 Wing-man

The wing-man is Indonesian, 25 years old and had 7 months experienced as wing-man.

At the day of the accident, the wing-man was on night shift from 2300 to 0730 LT and the pushback of PK-LZJ aircraft was his first duty assignment prior to the accident.

1.5.5 Headset-man

The headset-man is Indonesian, 27 years old which has qualification as aircraft mechanic. The headset-man had 4 years experienced as aircraft mechanic. The duty as aircraft mechanic usually follows by duty as headset-man.

At the day of the accident, the headset-man was on night shift from 1930 to 0730 LT and prior to the accident, the headset-man had performed daily check for the PK-LZJ aircraft which then followed by pushback operation.

1.6 Aircraft Information

The PK-LZJ aircraft had valid Certificate of Airworthiness and Certificate of Registration. There was no report or record of aircraft system malfunction during the occurrence. The aircraft was operated within the weight and balance envelope.

1.7 Meteorological Information

The meteorological information was not issue in this accident. The time of the accident was night time.

1.8 Aids to Navigation

The aids to navigation were not issue in this accident.

1.9 Communications

The communication between Makassar Tower controller and the pilot were recorded by ground based automatic voice recording equipment and the Cockpit Voice Recorder (CVR) while the communication between the headset-man and the pilot also was recorded by the CVR. The audio record on the CVR had overwritten as the aircraft continued the flight. The audio transmission recorded in the ground based automatic voice recording was in good quality. The significant excerpt of audio communication will be included in the final report.

1.10 Aerodrome Information

The Sultan Hasanuddin International Airport (WAAA) is operated by PT. Angkasa Pura I (Angkasa Pura I) which had valid aerodrome certificate. The airport located in Makassar, Indonesia on coordinate 05°03'39.00" S; 119°33'16.00" E.

The airport has three aprons (new, old and cargo), two runways (03-21 and 13-31), 13 taxiways and 37 parking stands. The airport layout can be seen on figure 1.

The parking stand B1 is located in new apron, on coordinate 05°04'31.66" S 119°32'54.51" E which located at the most north-east of the apron in conjunction of taxiway ECHO. The parking stand B1 is nose-in aircraft parking stand which can be used for narrow body aircraft including Airbus A320 aircraft. The aircraft parked on the parking stand B1 would face on heading 300° (north-west direction).

The parking stand B1 is a nose-in parking stand that has two offset nose-wheel lead-in line and one straight lead-in line. The lead-in lines also use for guidance during the pushback maneuver. One of the offset nose-wheel lead-in line could not be used since there was no taxi route from north east direction and the other is used for aircraft which taxied from taxiway FOXTROT (south-west direction). The straight lead-in line is used for aircraft which taxied from taxiway ECHO (south-east direction). Therefore, the designated number of parking stand B1 only painted in one offset nose-wheel lead-in line and straight lead-in line.

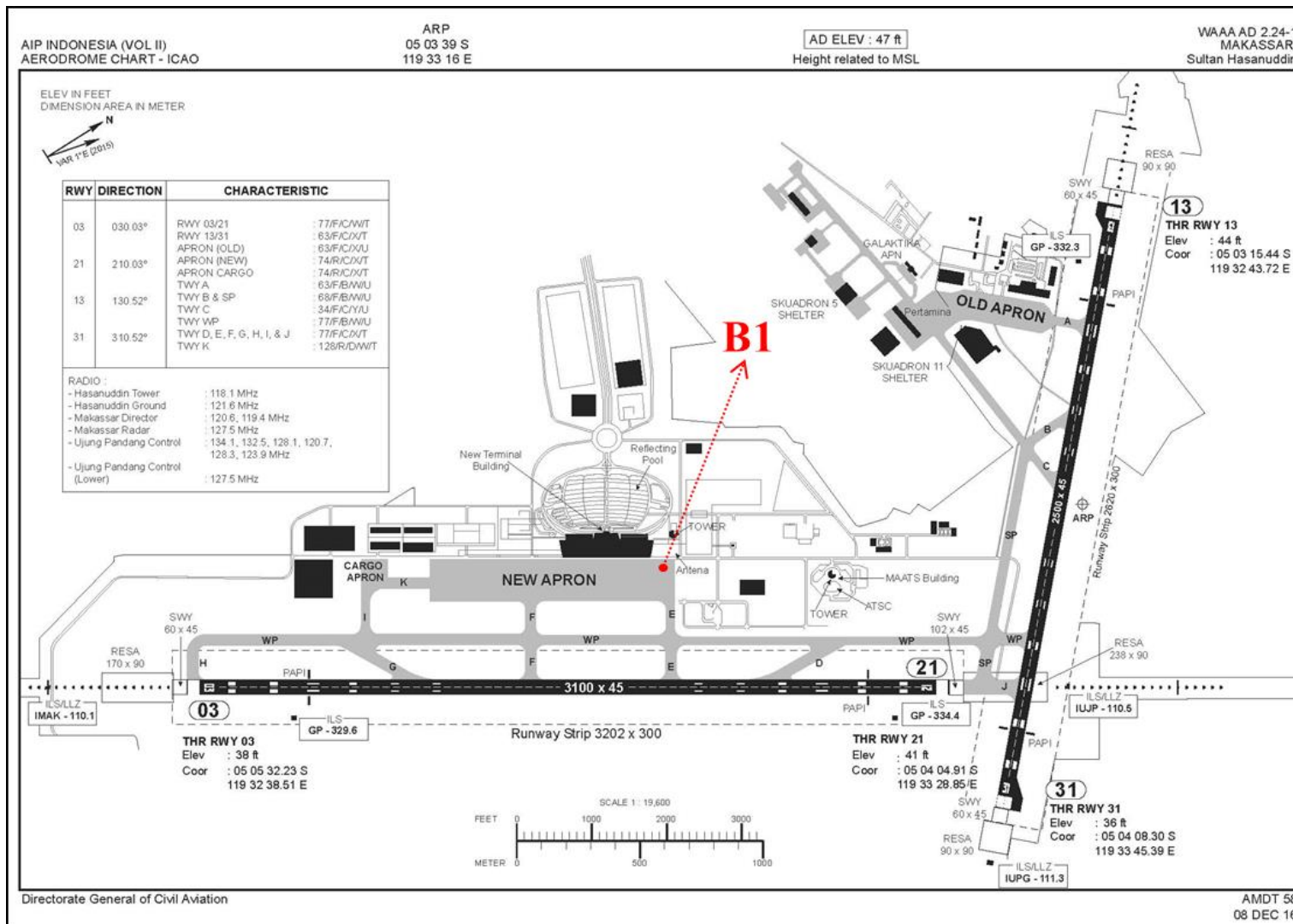


Figure 1: The apron layout

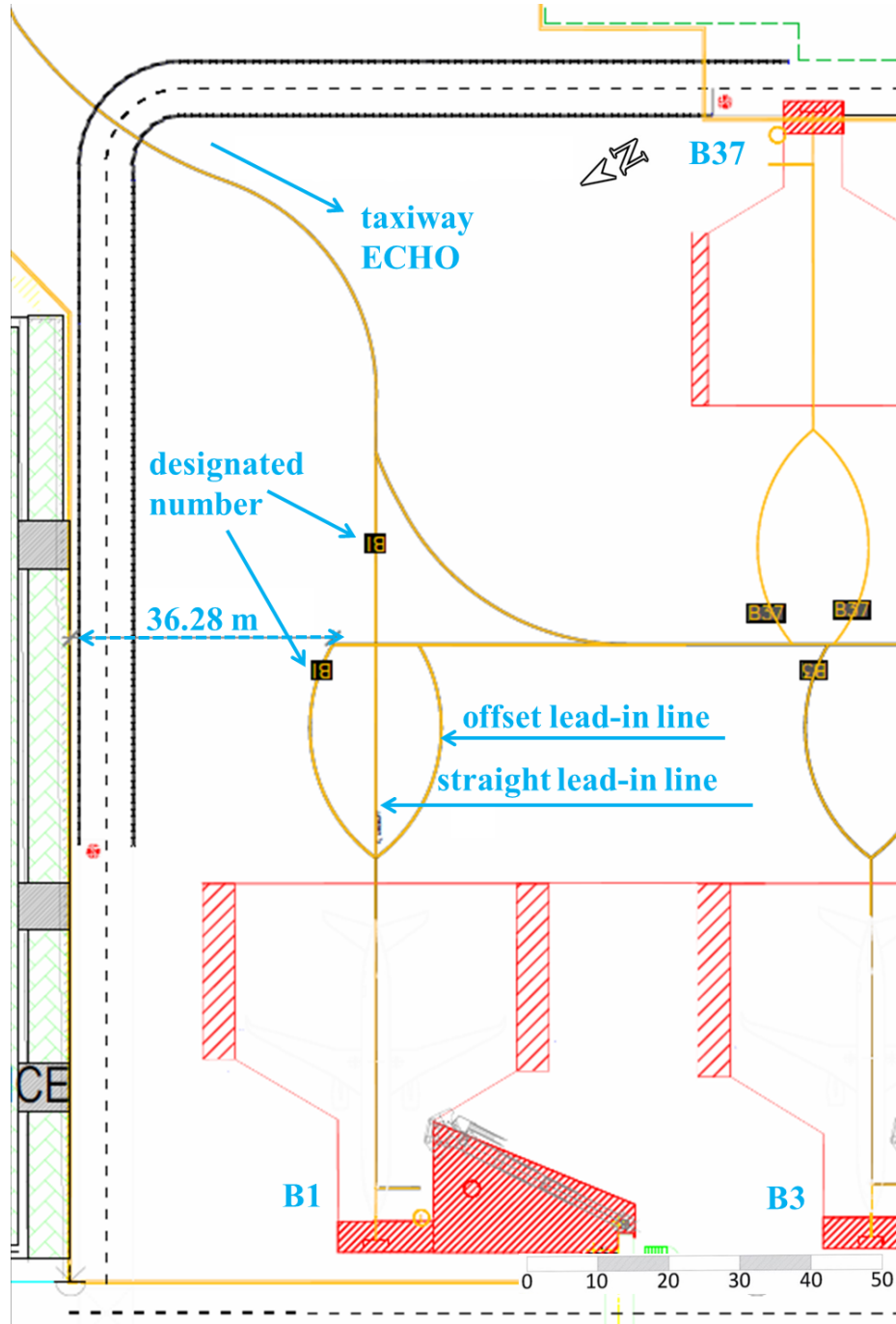


Figure 2: Parking stand B1 layout

1.11 Flight Recorders

The aircraft was equipped with Cockpit Voice Recorder (CVR) and Flight Data Recorder (FDR). The recorded voice communication on the CVR had overwritten.

The FDR of the aircraft was L-3 FDR model with part number 2100-4245-00 and serial number 001303540. The FDR was downloaded in the KNKT facility and contained data of 1,064 parameters with approximately 95 hours of aircraft operation, which was containing 40 flights including the accident flight.

The significant parameters of the FDR will be included in the final report.

1.12 Wreckage and Impact Information

During turning the aircraft from facing north east to south east, the nose wheel of the aircraft passed over the right headset-man foot. The towing tractor driver felt a bump and noticed that the headset-man collapsed on the ground.

After the bump, the towing tractor driver stopped the towing tractor and the aircraft stopped by facing south east. The aircraft was undamaged.

The location of the blood spills on coordinate $5^{\circ}4'32.86''\text{S}$; $119^{\circ}32'55.67''\text{E}$, about 50 meters from the beginning of parking stand B1 was considered as the location when the nose wheel passed over the right headset-man foot.



Figure 3: The position of the towing tractor and the aircraft after the accident

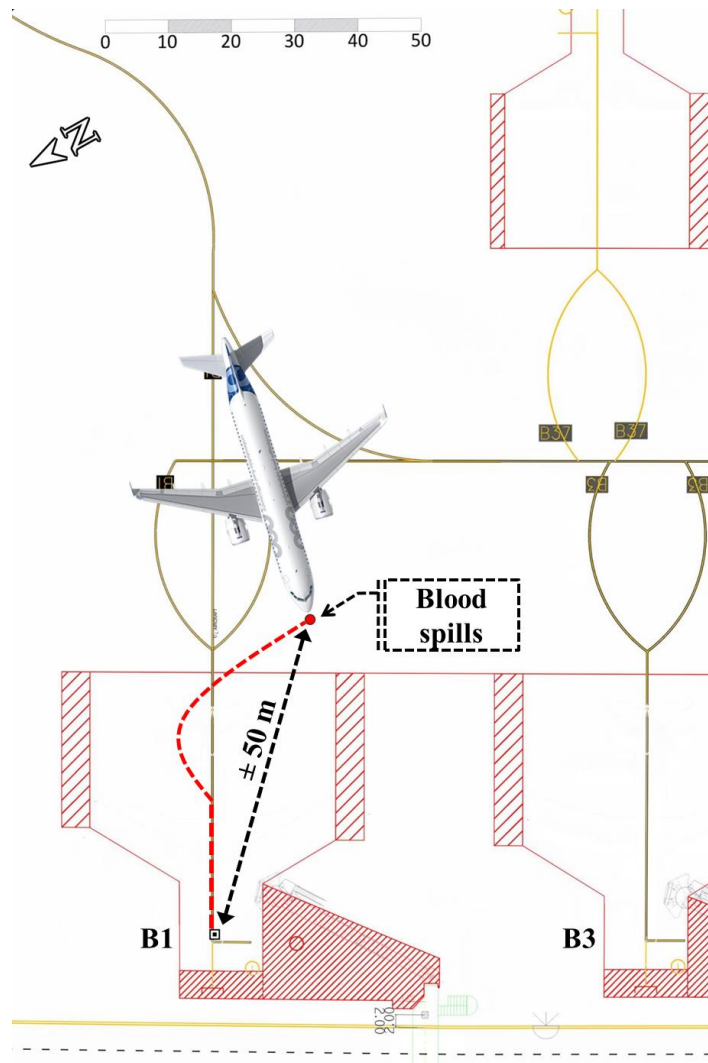


Figure 4: The illustration of the aircraft maneuverer (red dot line)

1.13 Medical and Pathological Information

No medical or pathological investigations were conducted as a result of this accident.

1.14 Fire

No evidence of fire during the accident.

1.15 Survival Aspects

The towing tractor driver stopped the maneuver after felt a bump and noticed that the headset-man collapsed on the ground. The wing-man then ran to the ground support office to report the occurrence and asked medical treatment for the headset-man. About four minutes later, the headset-man evacuated to the nearest hospital for medical treatment using Batik Air operational car.

1.16 Tests and Research

Should any test and research perform in relation to this investigation will be included in the final report.

1.17 Organizational and Management Information

1.17.1 Aircraft Operator

The PK-LZJ aircraft is owned by SMBC Aviation Capital Limited, Ireland and operated by PT. Batik Air Indonesia (Batik Air) that had valid Air Operator Certificate (AOC) number 121-050. The Batik Air was operating several aircraft types consisted of 43 Airbus A320-200, eight Boeing 737-800 and six Boeing 737-900ER aircraft.

The Batik Air has Operation Manual Part A (OM-part A) which contains policy and procedure approved by the Directorate General of Civil Aviation. The relevant subchapter to the investigation was described as follows:

11.1.1 ACCIDENT

An accident is an occurrence associated with the operation of an aircraft which:

- *the aircraft sustains damage or structural failure which:*
 - *adversely affects the structural strength, performance or flight characteristics of the aircraft; and*
 - *would normally require major repair or replacement of the affected component,*
- *except for engine failure or damage, when the damage is limited to the engine, its cowlings or accessories; or for damage limited to propellers, wing tips, antennas, tyres, brakes, fairings, small dents or puncture holes in the aircraft skin: or*
- *person is fatally or seriously injured as a result of:*
 - *being in the aircraft;*
 - *direct contact with any part of the aircraft, including parts which have become detached from the aircraft; or,*
 - *direct exposure to jet blast,*

Except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew.

- *The aircraft is missing or is completely inaccessible.*

11.1.4 SERIOUS INJURIES

A serious injury is an injury which is sustained by a person in an accident and which:

- *Requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or*
- *Results in a fracture of any bone (except simple fractures of fingers, toes or nose); or*
- *Involves lacerations which cause severe hemorrhage, nerve, muscle or tendon damage; or*
- *Involves injury to any internal organ; or*
- *Involves second or third degree burns, or any burns affecting more than 5 per cent of the body surface; or*
- *Involves verified exposure to infectious substances or injurious radiation.*

11.3 PROCEDURES IN CASE OF ACCIDENT, SERIOUS INCIDENT OR OVERDUE AIRCRAFT REPORT

11.3.1 INITIAL / IMMEDIATE NOTIFICATION TO THE COMPANY

In the event of an accident or a serious incident, either airborne or on the ground, the Pilot in Command or a crew member, if physically able, or any other person will advise OCC by the quickest available means, that will in turn advise SSQ Directorate.

In the case the OCC is aware of a BATIK AIR aircraft accident or a serious incident or, has reasons to believe a BATIK AIR aircraft has been involved in an accident, or in the case of an overdue aircraft report, the OCC will immediately advise BATIK AIR SSQ Directorate by the quickest available means.

As soon as it is advised of the situation, SSQ Directorate will declare the corresponding emergency phase and manage the situation in accordance with procedures detailed in the BATIK AIR Emergency Response Manual (ERM).

11.3.3 PRESERVATION, PRODUCTION AND USE OF FDR AND CVR

Following an accident or a serious incident, the Company must attempt to preserve all FDR and CVR data and make it available to the investigating authority. In addition, BATIK AIR will ensure all operational manuals and documents in force at the time of the accident / serious incident are collected and preserved.

PIC shall secure the CVR after experiencing serious incidents or accidents by pulling the CVR CB(s) on the ground after engine shutdown procedures completed and in coordination with maintenance personnel.

Events required pilot to secure the CVR CB(s)

I. ACCIDENTS

Weather occurrences causing serious injury or fatality for person onboard the aircraft.

II. SERIOUS INCIDENTS

- a. Collisions not classified as accidents.*
- b. Events requiring the emergency use of oxygen by the flight crew*
- c. Aircraft structural failures or engine disintegrations, including uncontained turbine engine failures, not classified as an accident.*
- d. Multiple malfunctions of one or more aircraft systems seriously affecting the operation of the aircraft.*
- e. Flight crew incapacitation in flight*
- f. Fuel quantity level or distribution situations requiring the declaration of an emergency by the pilot, such as insufficient fuel, fuel exhaustion, fuel starvation, or inability to use all useable fuel on board*
- g. Runway incursion in which a collision is narrowly avoided.*

11.4 REPORTABLE EVENTS

11.4.1 NOTIFICATION AND REPORTING OF ACCIDENTS AND SERIOUS INCIDENTS

As soon as it is advised of an accident or serious incident (refer to paragraph §11.3.1 "INITIAL NOTIFICATION" of this Chapter, the Company (SSQ Directorate) must, in turn, immediately, and by the most suitable and quickest means available, report to the Indonesian National Transportation Safety Committee (NTSC) and the DGCA, as well as to the Authority of the State of occurrence.

This immediate occurrence report must in all cases, be submitted within 24 hours following the accident or serious incident.

1.17.2 Ground Support Equipment Provider

The ground support equipment for Batik Air flight operations are provided by PT. Angkasa Aviasi Servis (AAS).

The AAS has Ground Support Equipment Operational Standard Operation Procedure (SOP) as guidance for AAS personnel, including procedure for towing tractor driver and wing-man. The subchapter 5.1.1 of the SOP, described the procedure for conducting pushback operation for aircraft, the procedure did not mention any requirement to conduct briefing with headset-man regarding the planning maneuver that will be conducted. The briefing is only required when perform aircraft towing.

1.17.3 Aircraft Maintenance Provider

The aircraft maintenance service for Batik Air flight operations in Makassar are provided by PT. Batam AeroTechnic (BAT). The BAT is an approved maintenance organization under Civil Aviation Safety Regulation (CASR) part 145 which had valid approval number 145D-914. The capability list approved by the Directorate General of Civil Aviation (DGCA) included the maintenance activities for all Batik Air aircraft in the base maintenance and line maintenance activities.

The line maintenance activities included aircraft daily check and departure handling. The aircraft departure handling includes pushback activity.

The BAT has Line Maintenance Procedure Manual (LMPM) which defines procedures in compliance with the aviation authority requirements, company policies, procedures and technical manuals to perform Line Maintenance activities to the customers under their company Fleet Management Programs.

The BAT LMPM subchapter 5.6.2.2 described procedures as follows:

5.6.2.2 DURING PUSH-BACK

- 1. Pushback speed during the whole operation shall not exceed 5 (five) km/hrs.*
- 2. Engineer or mechanic shall communicate with flight crew by interphone or visual signal and tractor driver/helper by visual signals and or verbal instruction refer to LMPM 4.1 Ground Cockpit Communication.*
- 3. Certifying/Engineer and tractor driver shall ensure that the center line of an aircraft fuselage (not only nose wheels) is aligned with the guideline.*
- 4. Complete the check of the surrounding area, the Engineer or mechanic shall give all clear signals to the flight crew. The engineer or mechanic ensures that the fire extinguisher is always available at stand during engine starting.*

The subchapter 7.2 described Accident/Incident Report with purpose to provide guidance for line maintenance personnel to report of any accident/incident occurs in the BAT customer fleet under the contracted maintenance. This subchapter did not describe the definition of accident or incident and only provided criteria of technical incident or reportable defect as follows:

7.2.2 CRITERIA OF TECHNICAL INCIDENT OR REPORTABLE DEFECT

Generally in the conditions to be reported are those identified by individuals that has resulted or may result in an unsafe condition that hazards seriously the flight safety. Examples of occurrences considered as Technical Incidents / Reportable Defects are listed below:

- *Serious structural damage (for example: cracks, permanent deformation, delamination, debonding, burning, excessive wear, or corrosion) found during maintenance of the aircraft or component.*
- *Serious leakage or contamination of fluids (for example: hydraulic, fuel, oil, gas or other fluids).*
- *Failure or malfunction of any part of an engine or power plant and/or transmission resulting in any one or more of the following:*
- *Non-containment of components/debris;*
- *Failures of the engine mount structure.*
- *Significant malfunction of a safety-critical system or equipment including emergency system or equipment during maintenance testing or failure to activate these systems after maintenance.*
- *Incorrect assembly or installation of components of the aircraft found during an inspection or test procedure not intended for that specific purpose.*
- *Wrong assessment of a serious defect, or serious non-compliance with MEL and*
- *Technical logbook procedures.*
- *Serious damage to Electrical Wiring Interconnection System (EWIS).*
- *Any defect in a life-controlled critical part causing retirement before completion of its full life.*
- *The use of products, components or materials, from unknown, suspect origin, or unserviceable critical components.*
- *Misleading, incorrect or insufficient applicable maintenance data or procedures that could lead to significant maintenance errors, including language issue.*
- *Incorrect control or application of aircraft maintenance limitations or scheduled maintenance.*
- *Releasing an aircraft to service from maintenance in case of any non-compliance which endangers the flight safety.*
- *Serious damage caused to an aircraft during maintenance activities due to incorrect maintenance or use of inappropriate or unserviceable ground support equipment that requires additional maintenance actions.*
- *Identified burning, melting, smoke, arcing, overheating or fire occurrences.*

- *Any occurrence where the human performance, including fatigue of personnel, has directly contributed to or could have contributed to an accident or a serious incident.*
- *Significant malfunction, reliability issue, or recurrent recording quality issue affecting a flight recorder system (such as a flight data recorder system, a data link recording system or a cockpit voice recorder system) or lack of information needed to ensure the serviceability of a flight recorder system.*

After the line maintenance personnel identified accident or incident had occurred, the procedure to be followed was as follows:

7.2.3 PROCEDURE

1. *Safety action: do not move the aircraft and wreckage from the place of accident/ incident unless:*
 - *It is already permitted by DGCA or local authority,*
 - *It is helping people in serious injury or trap,*
 - *It avoids aircraft to break down / create more damage,*
 - *It is avoiding or reducing danger to people,*
 - *It prevents from other accident/incident (air navigation, etc.).*

Before moving the aircraft and wreckage, pictures shall be made or a sketch hand marking shall be made around the aircraft on the land. The part that cannot be taken a picture shall be noted. Be careful while moving the aircraft break downs and care from adding trouble.

2. *The engineer who handles the aircraft shall be responsible for reporting immediately using Internal Occurrence report form (BT-QMF-042).*
3. *The report is to be acknowledged by the leader to MCC Duty Manager or Line Maintenance Manager (or Deputy) and can be handed-over or sent by e-mail.*
4. *Chief Line Station or Engineer in charge shall keep the copy of report in file.*
5. *The report shall be either written or type written in block letters and in English only.*
6. *Every incident / accident must be reported within 24 hours to Quality Assurance Department and Safety & Security (SMS) Department, with copy to Line Maintenance General Manager by MCC Duty Manager.*
7. *As necessary Quality Department and Safety Department may request additional details.*
8. *Any further investigation shall be done under SMS Department authority.*

NOTE: The aircraft records must be saved and do not change the record.

1.17.4 Airport Operator

The Sultan Hasanuddin International Airport is operated by PT. Angkasa Pura I (Angkasa Pura I) which also operates 12 other airports in Indonesia. The Angkasa Pura I had valid aerodrome certificate to operate airport service in Sultan Hasanuddin International Airport.

The airport service provided by the airport operator was included the apron movement control. The control was provided by Apron Movement Control (AMC) unit in coordination with the Makassar Tower control unit.

The AMC unit is responsible to monitor person and vehicle movement in the apron while the clearance for aircraft movement is provided by the Makassar Tower unit.

The airport operator had Working Instruction (WI) number IK/UPG-OP/PU-01-07 which contained instruction to be followed by the AMC unit during monitoring of pushback and start engine operation. The instruction number 6.8 described that during pushback operation, the towing tractor driver must be accompanied by wing-man and the aircraft must be pushed back following the guidance line until reach the taxiway centerline.

1.17.5 Air Traffic Services Provider

The *Perusahaan Umum Lembaga Penyelenggara Pelayanan Navigasi Penerbangan Indonesia* (AirNav Indonesia) is the Air Traffic Services (ATS) provider within Indonesia. The ATS in Makassar is provided by AirNav Indonesia branch office Makassar Air Traffic Services Center (MATSC) which held a valid Air Traffic Services provider certificate.

The ATS provided by the MATSC were aerodrome control service; approach control service; aeronautical communication service; and flight information services. The aerodrome control service is provided by the Makassar Tower control unit which includes providing taxi clearance to parking stand and pushback clearance from parking stand. The Makassar Tower unit must coordinate with AMC unit for assignment of the parking stand number.

1.17.6 Aerodrome Design Standards and Recommended Practices

International Civil Aviation Organization (ICAO) Document 9157 part 4 provides guidance for proper design and installation of visual aids used at airports. On the subchapter 2.3.5 lead-in line as follows:

Lead-in lines

2.3.5 *These lines provide guidance from apron taxiways into specific aircraft stands...For nose-in stands, the lead-in lines will mark the stand centre line to the aircraft stopping position. There will be no lead-out lines, and the tractor drivers will use the lead-in lines for guidance during the push-back manoeuvre.*

1.17.7 Accident within Indonesia Territory

According to the Aviation Law Number 1 of 2009 and Government Decree Number 62 of 2013 described that KNKT have responsibility to conduct investigation on accident of civil aircraft occurred within the territory of Republic of Indonesia.

The CASR part 830 subpart 830.2 defines:

***Accident.** An occurrence associated with the operation of an aircraft in which, in the case of a manned aircraft, takes place between the time any person boards the aircraft with the intention of flight until such time as all such persons have disembarked, or in the case of an unmanned aircraft, takes place between the time the aircraft is ready to move with the purpose of flight until such time as it comes to rest at the end of the flight and the primary propulsion system is shut down, in which:*

- a. *person is fatally or seriously injured as a result of:
 - 1) being in the aircraft, or
 - 2) direct contact with any part of the aircraft, including parts which have become detached from the aircraft, or
 - 3) direct exposure to jet blast,except when the injuries are from natural causes, self-inflicted or inflicted by other persons, or when the injuries are to stowaways hiding outside the areas normally available to the passengers and crew; or.*
- b. *the aircraft sustains damage or structural failure which:
 - 1) adversely affects the structural strength, performance or flight characteristics of the aircraft, and
 - 2) would normally require major repair or replacement of the affected component,except for engine failure or damage, when the damage is limited to a single engine (including its cowlings or accessories), to propellers, wing tips, antennas, probes, vanes, tires, brakes, wheels, fairings, panels, landing gear doors, windshield, the aircraft skin (such as small dents or puncture holes), or for minor damages to main rotor blades, tail rotor blades, landing gear, and those resulting from hail or bird strike (including holes in the radome);*
- c. *or the aircraft is missing or is completely inaccessible.*

***Serious injury.** An injury which is sustained by a person in an accident and which:*

- a. *requires hospitalization for more than 48 hours, commencing within seven days from the date the injury was received; or*
- b. *results in a fracture of any bone (except simple fractures of fingers, toes or nose); or*
- c. *involves lacerations which cause severe haemorrhage, nerve, muscle or tendon damage; or*
- d. *involves injury to any internal organ; or*
- e. *involves second- or third-degree burns, or any burns affecting more than 5 per cent of the body surface; or*
- f. *involves verified exposure to infectious substances or injurious radiation.*

Once accident of civil aircraft occurred within Indonesia territory, the CASR 830 subpart 830.06 requires person, organization or enterprise engaged in or offering to engage in an aircraft operation, with minimum delay and by the most suitable and quickest means available, must report to the *Komite Nasional Keselamatan Transportasi* (KNKT).

1.18 Additional Information

1.18.1 Towing Tractor Information

The towing tractor manufactured by PT. United Tractors Pandu Engineering (PATRiA), Indonesia and the model PTD 50 is capable to tow Airbus A320. According to the product specification, the maximum speed for PTD 50 with forward-1 clutch is 12 km/hour and forward-2 clutch is 32 km/hour. The steering wheel of the PTD 50 is left hand drive which the steering wheel is on the left side.

Prior to the accident, there was no report or record of towing tractor system malfunction.



Figure 5: The towing tractor

1.18.2 Investigation Process

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.

1.19 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 FINDINGS²

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

1. The pilots had valid licenses which qualified as Airbus A320 pilot and valid first-class medical certificates.
2. The air traffic controller had valid license and rating to perform aerodrome control service in Makassar Tower unit. The controller also had valid third-class medical certificate.
3. The towing tractor driver had valid Ground Support Equipment license and rating to drive Aircraft Towing Tractor. The towing tractor driver had 7 years experienced as Aircraft Towing Tractor driver.
4. The headset-man has qualification as aircraft mechanic and had 4 years experienced. The duty as aircraft mechanic usually follows by duty as headset-man.
5. The PK-LZJ aircraft had valid Certificate of Airworthiness and Certificate of Registration. There was no report or record of aircraft system malfunction during the occurrence.
6. The push back operation for PK-LZJ aircraft from parking stand B1 used towing tractor with crew consisted of towing tractor driver, wing-man and headset-man who performed by the mechanic.
7. The towing tractor is PTD 50 which capable to tow Airbus A320. The steering wheel of the PTD 50 is left hand drive which the steering wheel is on the left side.
8. The pushback was conducted at night time. During the pushback, the towing tractor head lights and rotating beacon light located above the driver compartment and the aircraft navigation lights were illuminated.
9. The towing tractor driver and wing-man used high visibility vest while the headset-man used company uniform without any fluorescence strip or high visibility vest.
10. The pushback maneuver of the aircraft was not following the straight lead-in line which provided to maneuver aircraft for facing south west.
11. The Apron Movement Control (AMC) unit of the airport operator is responsible to monitor person and vehicle movement in the apron while the clearance for aircraft movement is provided by the Makassar Tower unit.

² 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.

12. The Angkasa Pura I Working Instruction (WI) number IK/UPG-OP/PU-01-07 on the detail instruction number 6.8 described that during pushback operation, the towing tractor driver must be accompanied by wing-man and the aircraft must be pushed back following the lead out line until reach the taxiway centerline.
13. The towing tractor driver considered that if the offset lead-in line was followed, the aircraft maneuver would be too close to the service road.
14. The Batam Aero Technic (BAT) Line Maintenance Procedure Manual (LMPM) subchapter 5.6.2.2 described that certifying/engineer and tractor driver shall ensure that the center line of an aircraft fuselage (not only nose wheels) is aligned with the guideline.
15. During maneuvering and when the aircraft was facing north, the wing-man moved to the right side of the towing tractor to observe the left wing and the tail of the aircraft as there was an aircraft parked on stand 37. The headset-man was on the right side of the towing tractor driver and was walking faced to the aircraft to observe the aircraft engine starting process.
16. During the turning maneuver and the towing tractor was on the right side of the aircraft, the aircraft nose wheel passed over the right foot of the headset-man.
17. The location of the blood spills on coordinate 5°4'32.86"S; 119°32'55.67"E, about 50 meters from the beginning of parking stand B1 was considered as the location when the nose wheel passed over the right headset-man foot.
18. The visual observation to the right foot of headset-man indicated that there was possibility of bone fracture.
19. After arrived in the accident site, the engineer group leader on duty took over the duty of headset-man and advised the occurrence to the PIC.
20. The engineer group leader suggested the PIC to continue the flight as there was no damage found in the aircraft and it was agreed. The engineer group leader considered the occurrence was not mandatory occurrence to be reported as there was no defect on the aircraft. The aircraft continued to fly and arrived at the destination aerodrome uneventfully.
21. After landed the PIC filed occurrence report to the Batik Air Operation Department and the Safety, Security and Quality (SSQ) Department. The Komite Nasional Keselamatan Transportasi (KNKT) was notified of the occurrence by the SSQ Department after the PK-LZJ departed from Makassar.
22. The Flight Data Recorder (FDR) recorded the occurrence while the recorded voice communication on the Cockpit Voice Recorder (CVR) had overwritten.
23. The hospital observation indicated that the headset-man sustained fracture on his right tarsometatarsal. The headset-man was hospitalized for three days.
24. According to the Civil Aviation Safety Regulation part 830 subpart 830.2 and Batik Air OM-part A, the PK-LZJ occurrence is classified as accident which must be reported to the KNKT with minimum delay and by the most suitable and quickest means available.

25. The Batik Air OM-part A subchapter 11.3.1 described in the event of an accident, either airborne or on the ground, PIC or a crew member if physically able or any other person will advise the OCC by the quickest means available that will in turn advise the SSQ Directorate.
26. The Batik Air OM-part A subchapter 11.3.3 described following accident or a serious incident, the company must attempt to preserve all FDR and CVR data and make it available to the investigation authority. The PIC shall secure CVR after experiencing accident or serious incident by pulling the CVR CB(s) on the ground after engine shutdown procedures completed and in coordination with maintenance personnel. However, the accident which require PIC to pull the CVR CB(s) was only when any person experiences serious or fatal injury due to weather encounters.
27. The BAT LMPM subchapter 7.2 described occurrence criteria of accident/incident as a condition which has resulted or may resulted in an unsafe condition that seriously affected the flight safety. The manual provided example of accident/incident to be reported which only referred to technical incident or defect problem.

3 SAFETY ACTION

At the time of issuing this Preliminary Report, the KNKT had been informed of safety actions taken by the Batik Air resulting from this occurrence.

On 19 June 2019, the Batik Air published safety notice number 005/SSQ/SN/VI/2019. The notice was intended for pilot, flight attendant, line maintenance, flight operation officer and Integrated Operation Control Center (IOCC) officer with subject to ensure safety communication in regards with incident or accident could be performed appropriately.

The notice highlighted an occurrence which resulted in injury due to direct contact with any aircraft part as an example of abnormal situation that may categorized as accident. The detail of safety notice can be found in the appendix of this report.

4 SAFETY RECOMMENDATIONS

The KNKT acknowledged the safety actions taken by the Batik Air, however, there still remain safety issues that need to be considered. Therefore, the KNKT issues the following safety recommendations addressed to the Batik Air, Batam Aero Technic, Angkasa Aviasi Servis and Angkasa Pura I.

4.1 Batik Air

04.L-2019-10.1

According to the Civil Aviation Safety Regulation part 830 subpart 830.2 and Batik Air OM-part A subchapter 11.1, the PK-LZJ occurrence is classified as accident which must be reported to the KNKT with minimum delay and by the most suitable and quickest means available. As the occurrence was not reported to the KNKT, the PK-LZJ aircraft continued the flight to the destination aerodrome which made the CVR was overwritten.

The Batik Air OM-part A subchapter 11.3.3 described following accident or a serious incident, the company must attempt to preserve all FDR and CVR data and make it available to the investigation authority. The PIC shall secure CVR after experiencing accident or serious incident by pulling the CVR CB(s) on the ground after engine shutdown procedures completed and in coordination with maintenance personnel. However, the accident which requires PIC to pull the CVR CB(s) was only listed when any person experiences serious or fatal injury due to weather encounters.

Therefore, the KNKT recommend the Batik Air to review and amend procedure to enable CVR data can be preserved for investigation following accident and serious incident.

4.2 Batam Aero Technic

04.L-2019-10.2

According to the Civil Aviation Safety Regulation part 830 subpart 830.2, the PK-LZJ occurrence is classified as accident which must be reported to the KNKT with minimum delay and by the most suitable and quickest means available. As the occurrence was not reported to the KNKT, the PK-LZJ aircraft continued the flight to the destination aerodrome which made the CVR was overwritten.

The BAT LMPM subchapter 7.2 described occurrence criteria of accident/incident as a condition which has resulted or may resulted in an unsafe condition that seriously affected the flight safety. The manual provided example of accident/incident to be reported which only referred to technical incident or defect problem.

The engineer group leader suggested the PIC to continue the flight as there was no damage found in the aircraft and it was agreed. The engineer group leader considered the occurrence was not mandatory occurrence to be reported as there was no defect on the aircraft.

Therefore, the KNKT recommend the Batam Aero Technic to review and amend procedures to enable accident or serious incident can be reported to the KNKT without delay.

04.L-2019-10.3

The pushback was conducted at night time. During the pushback, the towing tractor driver and wing-man used high visibility vest while the headset-man used company uniform without any fluorescence strip or high visibility vest. The absence of fluorescence strip uniform or high visibility vest on personnel who working on aircraft movement area during night time or reduced visibility condition became hazard as those personnel might not be visible to other person.

Therefore, the KNKT recommend the Batam Aero Technic to ensure all personnel working in the aircraft movement area is equipped with fluorescence strip uniform or high visibility vest, especially during night time or reduced visibility condition.

4.3 Angkasa Aviasi Servis

04.L-2019-10.4

The pushback maneuver of the aircraft was not following the offset lead-in line which provided to maneuver aircraft for facing south west. The towing tractor driver considered that if the offset lead-in line was followed, the aircraft maneuver would be too close to the service road. However, there was straight lead-in line could be used as guidance during the pushback maneuver.

Since there was no requirement for briefing the wing-man and headset-man, the maneuver of towing tractor driver deviate from guidance line during pushback would only be known by the towing tractor driver. The deviation may make wing-man and headset-man are unaware of the maneuver.

Therefore, the KNKT recommend the Angkasa Aviasi Servis to ensure towing tractor drivers follow the available guidance line and/or conduct briefing for any plan of deviation maneuver from the guidance line.

4.4 Angkasa Pura I

04.B-2019-10.5

The Angkasa Pura I operates 13 airports includes Sultan Hasanuddin International Airport, the occurrence of PK-LZJ airport may have possibility to reoccur in the other airport. Therefore, this recommendation in this section is addressed to the Angkasa Pura I and not exclusively addressed to the Sultan Hasanuddin International Airport.

The Working Instruction (WI) number IK/UPG-OP/PU-01-07 on detail instruction number 6.8 described that during pushback operation, the AMC unit must ensure that towing tractor driver must be accompanied by wing-man and the aircraft must be pushed back following the guidance line until reach the taxiway centerline.

The pushback maneuver of the PK-LZJ aircraft was not following the offset lead-in line as the towing car driver considered that if the offset lead-in line was followed, the aircraft maneuver would be too close to the service road. However, there was straight lead-in line could be used as guidance to pushback aircraft facing South West.

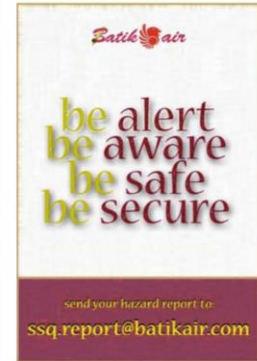
Therefore, the KNKT recommend the PT. Angkasa Pura I to improve the surveillance ensuring pushback operation follows the available guidance lines.

5 APPENDIX

Safety Notice Number 005/SSQ/SN/VI/2019

 <i>Safety, Security, and Quality</i>	SAFETY, SECURITY AND QUALITY DIRECTORATE	005/SSQ/SN/VI/2019
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<i>Date of effectiveness:</i>	June 19 th 2019
<i>Distribution list:</i>	DZ, DO, DE, QC, OF, OC, OFA, OFB, OFSA, OFSB, OS, OSF, IOCC, DE BAT, GM LM BAT
<i>Applicability:</i>	Pilot, FA, Engineer, Line Maintenance, FOO, IOCC
<i>Prepared by:</i>	SSF ID
<i>Checked by:</i>	SSS ID
<i>Approved by:</i>	DS ID
<i>Subject</i>	ENSURING SAFETY COMMUNICATION: ACCIDENT OR INCIDENT INITIAL ACTION & NOTIFICATION



Dear All Concerned,

If experiencing an abnormal situation during flight which could be categorized as incident, serious incident or accident, the company shall ensure a proper follow up to prepare initial Safety Action(s) and to manage irregularity. A proper Safety Communication should be in place and understood by Batik Air and Lion Group employees.

To ensure the Safety Communication while facing an abnormal situation in flight, Flight Crew shall notify the company as soon as practicable via Lion Group Company VHF Frequency as to rise company concern and to ensure proper incident or accident management.

After an abnormal situation, Flight Crew and Flight Attendant and Engineer and IOCC Staff are responsible to perform and to prioritize initial notification to Safety Security and Quality Assurance Directorate (SSQ).

Batik Air SSQ is in charged and has the responsibility to decide the continuity of duty for **Flight Crew** and for **Flight Attendant** and the continuity of the **Aircraft Operation** affected by the occurrence as to determine the need of performing investigation by coordinating with National Transportation Safety Committee (NTSC / KNKT) and Directorate General of Civil Aviation (DGCA).

Examples of abnormal situation that may be categorized as serious incident or accident listed as follow:

1. Engine failure or significant system failure
2. Aircraft body/fuselage damaged
3. Near collision with aircraft or terrain
4. Take-off and landing incident (including Runway Excursion and Runway Incursion)
5. Events requiring emergency use of oxygen (Emergency Descent)
6. Fuel related events (Short of Fuel)
7. Return to Base (RTB)
8. Injury to Flight Occupants or Passenger due to turbulence
9. Injury due to direct contact with any aircraft part
10. Ground Collision

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Following an abnormal condition classified as incident, serious incident or accident as mentioned above; SSQ recommend a course of initial action to be initiated by Pilot, Flight Attendant, Engineer / Maintenance Personnel as described below.

I. PILOT / FLIGHT CREW

- a) Post flight, Pilot / Flight Crew shall immediately notify SSQ Batik Air by contacting:
 - 1. SSQ Director (DS) : [REDACTED]
 - 2. Head of Safety & Security (SS) : [REDACTED]
- b) Pilot / Flight Crew shall report discrepancy (s) experienced throughout the flight on the Aircraft Flight Maintenance Log (AFML).
- c) Pilot / Flight Crew shall notify Operation Directorate by contacting respective Chief Pilot or Flight Crew Manager.
- d) Pilot / Flight crew shall report the abnormal situation on the Trip Trouble Report form (available on Aircraft Library) combining with the Flight Attendant / Cabin Crew report. The report should describe flight abnormalities and experience as detailed as possible.

II. FLIGHT ATTENDANT

- a) Flight Attendant / Cabin Crew shall immediately notify SSQ Cabin Safety Officer (CSO) on these contact number:
 - 1. CSO 1 : [REDACTED]
 - 2. CSO 2 : [REDACTED]
- b) Flight Attendant / Cabin Crew shall notify Chief Flight Attendant or Flight Attendant Manager.
- c) Flight Attendant / Cabin Crew shall assist Flight Crew to fill Trip Trouble Report regarding additional information concerning aircraft cabin situation while facing the abnormality(s) and post occurrence (including passenger's condition).

III. ENGINEER AND MAINTENANCE PERSONNEL

- a) Engineer and Maintenance Personnel shall ensure that the Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR) are secured after the aircraft landed in order to ensure the preservation of data recorded throughout the flight.
- b) Engineer and Maintenance Personnel shall **NOT** perform any rectification or troubleshooting or any maintenance action following the occurrence unless SSQ Director or SSQ Directorate Representative gives a clearance after coordination with NTSC (KNKT) and DGCA.

IV. FOO AND IOCC STAFF

- a) FOO shall ensure the readiness of all communication device during the entire duty time including Base Station for Ground-to-Air Radio, Flight Operation Office (FLOP) telephone and personal mobile phone.
- b) FOO shall actively communicate with Flight Crew via Ground-to-Air Radio to get the updated flight condition as well as to confirm any requested assistance on the ground.
- c) FOO shall immediately and continuously inform IOCC regarding the latest information.

Form No.: BA-SSQF-02-002R01

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- d) FOO shall immediately coordinate and inform the respective Department for any significant information as well as to ensure condition for the requested assistance(s) on the ground.
- e) IOCC shall coordinate with relevant Department to minimize schedule irregularity(s) as to prevent long delay or postponed flight.

For more information related to Serious Incident, please kindly review:

1. **Operations Manual A 11.1.3** Serious Incident
2. **Operations Manual A 11.3.1** Initial / Immediate Notification to the Company
3. **Operations Manual A 11.3.3** Preservation, Production and Use of FDR and CVR

For any **difficulties, deficiencies or deviations** during daily operations, do not hesitate to submit report to SSQ Batik Air with the following methods:

- 1. SSQ Hotline (Working Hours) : [REDACTED]
- 2. SSQ WhatsApp : [REDACTED]
- 3. SSQ EMAIL : [REDACTED]
- 4. Coruson : [REDACTED]
- user and password for pilot : [REDACTED]
- user and password for non-pilot : [REDACTED]

Thank you for your attention and cooperation.

KOMITE NASIONAL KESELAMATAN TRANSPORTASI REPUBLIK INDONESIA

Jl. Medan Merdeka Timur No.5 Jakarta 10110 INDONESIA

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