PRELIMINARY
KNKT.16.04.07.04

KOMITE NASIONAL KESELAMATAN TRANSPORTASI

Aircraft Accident Investigation Report

Batik Air Indonesia and TransNusa Aviation
Boeing 737-800 (PK-LBS) and ATR 42-600 (PK-TNJ)
Halim Perdanakusuma International Airport, Jakarta
Republic of Indonesia
4 April 2016

KOMITE NASIONAL KESELAMATAN TRANSPORTASI
REPUBLIC OF INDONESIA
2016

This Preliminary report was produced by the Komite Nasional Keselamatan Transportasi (KNKT), 3rd Floor Ministry of Transportation, 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 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.

Readers are advised that the KNKT investigates for the sole purpose of enhancing aviation safety. Consequently, the KNKT reports are confined to matters of safety significance and may be misleading if used for any other purpose.

As the KNKT believes that safety information is of greatest value if it is passed on for the use of others, readers are encouraged to copy or reprint for further distribution, acknowledging the KNKT as the source.

When the KNKT makes recommendations as a result of its investigations or research, safety is its primary consideration.

However, the KNKT fully recognizes that the implementation of recommendations arising from its investigations will in some cases incur a cost to the industry.

Readers should note that the information in KNKT reports and recommendations is provided to promote aviation safety. In no case is it intended to imply blame or liability.

TABLE OF CONTENTS

TABLE OF FIGURES

ABBREVIATIONS AND DEFINITIONS

AIP	:	Aeronautical Information Publication
AMC	:	Apron Movement Control
AOC	:	Airline Operator Certificate
APU	:	Auxiliary Power Unit
ATIS	:	Automatic Terminal Information Service
ATPL	:	Airline Transport Pilot License
ATS	:	Air Traffic Services
BMKG	:	*Badan Meteorologi Klimatologi Geofisika* / Meteorological Climatological and Geophysics Agency
CB	:	Cumulonimbus
CPL	:	Commercial Pilot License
CVR	:	Cockpit Voice Recorder
FA	:	Flight Attendant
FDR	:	Flight Data Recorder
ICAO	:	International Civil Aviation Organization
KNKT	:	Komite Nasional Keselamatan Transportasi
LPPNPI	:	Lembaga Penyelenggara Pelayanan Navigasi Penerbangan Indonesia (AirNav Indonesia)
LT	:	Local Time
MHz	:	Megahertz
PALS	:	Precision Approach Lighting System
PF	:	Pilot Flying
PIC	:	Pilot in Command
QRH	:	Quick Reference Handbook
RAAS	:	Runway Awareness Advisory System
RFFS	:	Rescue and Fire Fighting Service
SIC	:	Second in Command
TOGA	:	Take off / Go Around
TWR	:	Tower
UTC	:	Universal Coordinated Time
VHF	:	Very High Frequency

INTRODUCTION

SYNOPSIS

On 4 April 2016, Boeing 737-800 registration PK-LBS was being operated by Batik Air as scheduled passenger flight with flight number ID 7703 from Halim Perdanakusuma Airport (Halim) with intended destination Makassar. On board this flight were 56 persons consist of two pilots, five flight attendants and 49 passengers.

An ATR 42-600 aircraft, registration PK-TNJ operated by TransNusa Aviation Mandiri was being towed from north to south apron. The towed aircraft was towed without aircraft electrical power fed to the system and neither of navigation light, strobe light and the aircraft radio communication was ON.

At the time of occurrence, the ID 7703 pilot communicated to Halim tower on frequency 118.6 MHz while the towed aircraft communicated using handheld radio on frequency 152.7 MHz.

At 1245 UTC, ID 7703 pilot received pushback clearance from Halim tower controller. After ID 7703 pushed back, towing car driver requested clearance for towing and was instructed to follow ID 7703 and to report when on taxiway "C".

The Halim tower instructed towing car driver to expedite the tow and to follow ID 7703 several times.

At 1256 UTC, ID 7703 pilot received takeoff clearance and initiated the takeoff. The towing car driver saw the ID 7703 was lining up prepared to takeoff, then speed up and turned the towing car to the right.

At 1257 UTC, the ID 7703 collided with the towed aircraft. The ID 7703 pilot rejected the takeoff and stopped approximately 400 meter from the collision point while the towed aircraft stopped on the right of the runway 24 centerline.

No one injured at this occurrence and both aircraft severely damaged.

Following this occurrence, the Komite Nasional Keselamatan Transportasi (KNKT) issued safety recommendations to AirNav Indonesia District Office Halim Perdanakusuma, PT. Angkasa Pura II Branch Office Halim Perdanakusuma International Airport and Directorate General of Civil Aviation.

The KNKT had been informed several safety actions and corrective actions taken by involve parties.

The investigation is continuing and will include details of the following:

- Relevant ATC and aerodrome issues including the lighting, communication frequency and workload.
- Aircraft towing requirement and procedure.
- Human factors issues.

Should any further critical 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 4 April 2016, Boeing 737-800 registered PK-LBS was being operated by Batik Air as scheduled passenger flight with flight number ID 7703 [1] from Halim Perdanakusuma International Airport[2] with intended destination Sultan Hasanuddin International Airport Makassar. On board this flight were 56 persons consist of two pilots, five flight attendants and 49 passengers.

Figure 1: Archive photo of PK-LBS (courtesy of jetphotos.net)

An ATR 42-600 aircraft, registration PK-TNJ [3] operated by TransNusa Aviation Mandiri was parked at parking stand B-1 on the north apron of Halim. The TransNusa Aviation Mandiri engineer was instructed by the Apron Movement Control (AMC) to move PK-TNJ aircraft from north to south apron.

PK-TNJ aircraft was moved used a towing car. On board the towing car were one driver and one supporting personnel, while on board in the cockpit of the towed aircraft were two engineers. The engineers were assigned to apply aircraft brake if required during the towing process.

The towed aircraft was towed without aircraft electrical power fed to the system and neither of navigation light, strobe light and the aircraft radio communication was ON.

1 Boeing 737-800 aircraft registered PK-LBS will be named as ID 7703.

2 Halim Perdanakusuma Airport will be named as Halim for the purpose of this report.

3 ATR 42-600 aircraft aircraft registered PK-TNJ will be named as towed aircraft.

An engineer of TransNusa Aviation Mandiri stated that the aircraft battery could be used to activate the aircraft radio communication but could not be used to activate the aircraft navigation lights. Therefore, during the towing process the aircraft navigation light were not activated. The communication between the towing car driver and Halim Tower was performed by a handheld radio communication on frequency 152.7 MHz.

Figure 2: Archive photo of PK-TNJ (courtesy of jetphotos.net)

The air traffic controller set crew on duty consisted of controller, assistant controller, supervisor and flight data officer. The lights in the tower cab[4] were illuminated and there were several lights reflection on the tower glass windows including the view to the direction of the beginning runway 24.

At 1245 UTC[5], the ID 7703 pilot requested pushback clearance to the Halim Tower controller (controller) on Halim Tower radio frequency of 118.6 MHz. The aircraft was parked on the parking stand B-2 and was approved to push back.

4 Tower cab is a working room for the air traffic controller on the top of the tower building.

5 The 24-hour clock used in this report to describe the time of day as specific events occurred is in Coordinated Universal Time (UTC). Local time that be used in this report is Waktu Indonesia Barat (WIB) or Indonesia Western Time which is UTC + 7 hours.

After the ID 7703 completed the pushback, the towing car driver of the towed aircraft requested clearance to Halim Tower Control Unit (Halim Tower) to reposition from parking stand B-1 to south apron. The towing car driver was instructed to follow ID 7703 and to report when on taxiway "C". The communication between the towing car driver and Halim Tower was performed by a handheld radio communication. This communication was handled by the assistant controller (assistant).

The controller heard the communication between the assistant and towing car driver, he recognized the position of the towed aircraft was on the parking stand B-1. The controller did not see the towed aircraft exterior lights illuminated during the movement.

The ID 7703 pilots did not know that there was a towing aircraft behind.

At 1248 UTC, the ID 7703 pilot received taxi clearance to runway 24 via taxiway "C".

At 1250 UTC, the controller instructed the ID 7703 pilot to hold on taxiway "C" due to arriving aircraft.

The assistant stated that when the ID 7703 was holding on short taxiway "C", the towed aircraft started to tow.

At 1253 UTC, the ID 7703 pilot received clearance from controller to enter back track runway 24.

There was an arriving aircraft that would use the parking stand B-1 therefore, the assistant instructed the towing car driver to expedite the tow and report when on taxiway "C". The towed aircraft position was on abeam[6] parking stand B-9.

The assistant noticed the last position of the towed aircraft was when the aircraft abeam the tower building, thereafter the assistant conducted coordination with the other ATS unit related to other departure aircraft. The assistant did not recall any visible light of towed aircraft except the light from the towing car.

The towing car driver explained that when about entering taxiway "C", the assistant instructed to expedite the towing and follow ID 7703 and was acknowledged by the towing car driver.

The towing car driver stated that when the towed aircraft on taxiway "C", the assistant instructed to expedite the towing, and was acknowledged by towing car driver. Thereafter, the towing car driver clarified that the taxi route was via taxiway "G" and was affirmed by the assistant. Meanwhile, the ID 7703 was still on back track runway 24.

At 1256 UTC, the ID 7703 pilot reported ready for takeoff. The controller did not see any vehicle or object on the runway then issued clearance for takeoff to the ID 7703 pilot.

6 Abeam is at right angle to the fore and aft line of a vessel or an aircraft.

The pilot stated that during line up, the lights surround the turn pad were very bright and affected his forward vision for a short time. It was common practice in Halim to lineup at the turn pad beyond the threshold runway 24.

After received the takeoff clearance, the Second in Command (SIC) as pilot flying (PF) opened the power and pressed the Take Off / Go Around (TOGA) button.

The towing car driver stated that when he saw the ID 7703 was lining up for takeoff then asked to the Halim Tower whether the ID 7703 was initiating the takeoff, and there was no reply from the Halim Tower. The towing car driver then speeds up the towing and turned to the right side of the runway.

When ID 7703 was on rolling takeoff at approximate 80 knots, the SIC saw an object and confirming to the Pilot in Command (PIC) concerning to the object. The pilots could not identify the object but later on when the object became closer, the SIC realized that there was an aircraft.

The PIC took over control and applied the right rudder towards the right side of runway centerline and maintained between the runway centerline and the runway edge. The PIC intended to reject the takeoff shortly after the pilot felt an impact. The pilot performed the reject takeoff and the ID 7703 stopped at approximately 400 meter from the towed aircraft which stopped at the left of the runway 24 centerline at approximately 100 meters from taxiway "G".

The assistant saw fire on the left side of ID 7703 when the aircraft rolled between taxiway "C" and "B". Then the assistant pressed the crash bell and informed Rescue and Fire Fighting Service (RFFS) about the fire.

After the aircraft stopped, the PIC commanded to the SIC to perform "ON GROUND EMERGENCY" procedure, and commanded to the flight attendant "ATTENTION CREW ON STATION" twice. The PIC noticed fire on the left wing tip and immediately shut down both engines, activated the fire extinguishers of both engines and Auxiliary Power Unit (APU) and commanded to the flight attendant "evacuation from the right".

After the aircraft stopped and received the PIC command "ATTENTION CREW ON STATION", the flight attendants checked the condition inside and outside the aircraft through the viewing window. There was no damage inside the aircraft and they did not see any fire outside the aircraft.

The flight attendants opened all aircraft passenger doors and the escape slides deployed. Most of passengers were evacuated from the left forward door (1L).

The pilots realized that the impacted object was a towing aircraft after they disembarked the aircraft.

The air traffic controller set crew realized that the towed aircraft was on the runway and collided with ID 7703 after asked to the towing car driver.

No one injured in this occurrence.

1.2 Injuries to Persons

1.2.1 ID 7703

Injuries	Flight crew	Passengers	Total in Aircraft	Others
Fatal	-	-	-	-
Serious	-	-	-	-
Minor/none	7	49	56	-
TOTAL	7	49	56	-

1.2.2 Towed Aircraft

Injuries	Flight crew	Passengers	Total in Aircraft	Others (Towing Car)
Fatal	-	-	-	-
Serious	-	-	-	-
Minor/none	-	-	2	2
TOTAL	-	-	2	2

1.3 Damage to Aircraft

1.3.1 ID 7703

The damaged to aircraft were as follows:

- The left wing damaged approximately 575 centimeters from the wingtip.
- The wingtip damaged in two parts.

Figure 3: The damaged left wing

1.3.2 Towed Aircraft

The damaged to aircraft were as follows:

- The left wing damaged approximately 260 centimeters from the wingtip.
- The vertical stabilizer damaged including the horizontal stabilizer.

Figure 4: The detached part of wing and horizontal stabilizer

1.4 Other Damage

There was no environment and other damage reported.

1.5 Personnel Information

1.5.1 ID 7703

Pilot in Command

Gender	:	Male
Age	:	55 Years
Nationality	:	Indonesia
Marital status	:	Married
Date of joining company	:	29 June 2014
License	:	ATPL
Date of issue	:	7 May 1993
Validity	:	31 May 2016

Aircraft type rating	:	B737NG
Instrument rating validity	:	30 November 2016
Medical certificate	:	First Class
Last of medical	:	28 October 2015
Validity	:	30 April 2016
Medical limitation	:	Holder shall possess glasses that correct for near vision
Last line check	:	19 October 2015
Last proficiency check	:	19 November 2015

Flying experience

Total hours	:	18,765 hours 5 minutes
Total on type	:	1,825 hours 20 minutes
Last 90 days	:	290 hours 15 minutes
Last 60 days	:	197 hours
Last 30 days	:	103 hours
Last 24 hours	:	1 hours 45 minutes
This flight	:	12 minutes

Second in Command

Gender	:	Male
Age	:	26 Years
Nationality	:	Indonesia
Marital status	:	Married
Date of joining company	:	5 August 2015
License	:	CPL
Date of issue	:	7 May 2014
Validity	:	30 June 2016
Aircraft type rating	:	B737NG
Instrument rating validity	:	30 June 2016
Medical certificate	:	First Class
Last of medical	:	26 February 2016
Validity	:	31 August 2016
Medical limitation	:	None
Last line check	:	TBA
Last proficiency check	:	TBA

Flying experience

Total hours	:	368 hours 45 minutes
Total on type	:	215 hours
Last 90 days	:	114 hours 25 minutes
Last 60 days	:	89 hours 50 minutes
Last 30 days	:	49 hours 25 minutes
Last 24 hours	:	1 hours 46 minutes
This flight	:	12 minutes

1.5.2 Towed Aircraft

Prior to handle the towed aircraft, the towing car driver has handled another aircraft which was towed from north apron via taxiway "C" and "G" then parked at south apron.

The detail information and experience of engineers and ground support personnel will be included in the final report.

1.5.3 Air Traffic Controller

Controller

Gender	:	Male
Age	:	36 years
Nationality	:	Indonesia
Marital status	:	Married
Year of joining company	:	2010
License	:	Air Traffic Controller License
Date of issue	:	1 February 2014
Type rating	:	Halim Aerodrome Control Rating
Date of issue	:	June 2016
Medical certificate	:	Second Class
Last of medical	:	13 May 2015
Validity	:	13 May 2016
Medical limitation	:	None
ICAO Language Proficiency	:	Level 4
Date of issue	:	24 November 2013

Working time

Last 7 days	:	42 hours 57 minutes
Last 24 hours	:	57 minutes

Duty time

Last 7 days	:	2 hours 27 minutes
Last 24 hours	:	57 minutes

Assistant Controller

Gender	:	Male
Age	:	25 years
Nationality	:	Indonesia
Marital status	:	Single
Year of joining company	:	2015
License	:	Air Traffic Controller License
Date of issue	:	10 February 2015
Type rating	:	Halim Aerodrome Control Rating
Validity	:	June 2016
Medical certificate	:	Second Class
Last of medical	:	13 May 2015
Validity	:	13 May 2016
Medical limitation	:	None
ICAO Language Proficiency	:	Level 4
Date of issue	:	7 November 2014

Working time

Last 7 days	:	42 hours 57 minutes
Last 24 hours	:	57 minutes

Duty time

Last 7 days	:	4 hours
Last 24 hours	:	57 minutes

Supervisor

Gender	:	Male
Age	:	52 Years
Nationality	:	Indonesia
Marital status	:	Married
Year of joining company	:	1994
License	:	Air Traffic Controller License
Date of issue	:	1 February 2014

Type rating	:	Halim Aerodrome Control Rating
Validity	:	June 2016
Medical certificate	:	Third Class
Last of medical	:	3 March 2016
Validity	:	3 March 2017
Medical limitation	:	Holder shall possess glasses that correct for near vision
ICAO Language Proficiency	:	Level 4
Date of issue	:	24 November 2013

Working time

Last 7 days	:	29 hours 57 minutes
Last 24 hours	:	11 hours 57 minutes

Flight Data Officer

Gender	:	Male
Age	:	25 years old
Nationality	:	Indonesia
Marital status	:	Single
Year of joining company	:	2013
License	:	Air Traffic Control License
Date of issue	:	13 May 2015
Type rating	:	Halim Aerodrome Control Rating
Validity	:	June 2016
Medical certificate	:	Second Class
Last of medical	:	13 May 2015
Validity	:	13 May 2016
Medical limitation	:	None
ICAO Language Proficiency	:	Level 4
Date of issue	:	30 November 2012

Working time

Last 7 days	:	28 hours 57 minutes
Last 24 hours	:	6 hours 57 minutes

Note:

Working time is the time period when the person attends their particular working shift, while the duty time is the time period when the person performs their duty to provide air traffic control service.

1.6 Aircraft Information

1.6.1 ID 7703

The ID 7703 is Boeing 737-800NG aircraft that was manufactured in United States of America by the Boeing Company on 2014. The aircraft had valid Certificate of Airworthiness and Certificate of Registration. The aircraft maintenance record did not show any abnormality on the aircraft systems.

1.6.2 Towed Aircraft

The towed aircraft is an ATR 42-600 aircraft that was manufactured in France by the Avions de Transport Regional aircraft company on 2014. The aircraft had valid Certificate of Airworthiness and Certificate of Registration. The aircraft maintenance record did not show any abnormality on the aircraft systems.

1.7 Meteorological Information

The hourly weather report for Halim Perdanakusuma International Airport issued by BMKG Meteorological Station on 4 April 2016 between 1200 until 1400 UTC, there was cumulonimbus cloud on southwest of the airport, the visibility was 5 kilometer and hazy.

1.8 Aids to Navigation

Ground-based navigation aids / on-board navigation aids / aerodrome visual ground aids were serviceable during this occurrence.

1.9 Communications

All communications between air traffic controller and the ID 7703 pilot on frequency 118.6 MHz were recorded by ground based automatic voice recording equipment and the ID 7703 Cockpit Voice Recorder (CVR). The quality of the recorded transmissions was good.

The communication between Halim Control Tower Unit and towed car driver on frequency 152.7 MHz was not recorded.

The following is the excerpt of the communication between towing car driver and Halim Tower unit on frequency 152.7 MHz was based on interview statement with the related person on duty during the towing process.

At parking stand B-1:

The towing car driver requested reposition from parking stand B-1 to south apron to Halim Control Tower Unit (Halim Tower) and replied by the flight data officer to standby. After the ID 7703 moved forward, the towing car driver instructed by Halim Tower unit to continue towing and report taxiway “C”.

Abeam parking stand B-9:

Assistant controller instructed towing car driver to expedite the towing following ID 7703 and acknowledged by towing aircraft driver.

At about entering taxiway "C":

Assistant controller instructed towing car driver to expedite the towing following ID 7703 and acknowledged by towing aircraft driver.

At taxiway "C":

Assistant controller instructed towing car driver to expedite the towing, and acknowledged by towing aircraft driver. The towing car driver confirmed the taxi route via taxiway "G" and affirmed by the assistant controller.

On the runway between taxiway "G" and "H":

The towing car driver asked Halim Tower whether the ID 7703 take off twice and there was no reply.

1.10 Aerodrome Information

Airport Name	:	Halim Perdanakusuma International Airport
Airport Identification	:	WIHH / HLP
Airport Operator	:	PT. Angkasa Pura II (Persero)
Airport Certificate	:	008/SBU-DBU/VII/2010
Coordinate	:	06°17'03"S 106°53'06"E
Elevation	:	84 feet
Runway Direction	:	06 – 24
Runway Slope	:	0.07% down to east
Runway Length	:	3,000 meters
Runway Width	:	45 meters
Surface	:	Asphalt concrete

1.10.1 Airport Layout

The following layout was taken from the current Aeronautical Information Publication (AIP) Volume II.

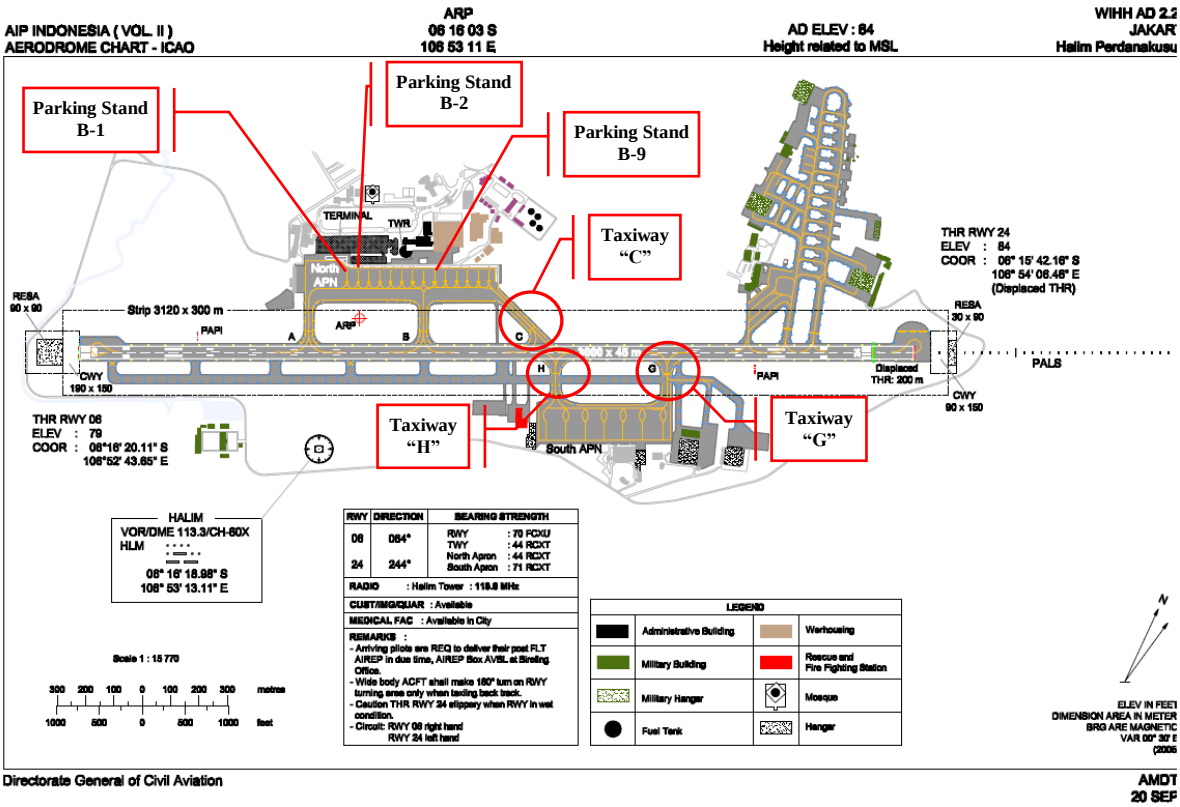

Figure 5: The Halim Perdanakusuma International Airport layout

The pilots stated that the lightings on the turn pad were bright. The investigation received a photo showing the lightings condition taken on 20 November 2015 on turn pad by a flight crew, when aircraft was lining up on runway 24.

Figure 6: View from Cockpit on Line up position runway 24

The Precision Approach Lighting System (PALS) lights and the runway threshold lights are buried light under the runway surface.

Refer to published Aeronautical Information Publication (AIP) Volume I Amendment 28, Halim have a 3,000 meters runway and displaced 200 metres. The displacement was based on Approach Light Category 1 which required a number of PALS.

1.11 Flight Recorders

1.11.1 Towed Aircraft Flight Recorders

The aircraft was towed without electrical supply, therefore there was no data recorded by the FDR and CVR related to this accident.

1.11.2 ID 7703 Flight Recorders

Flight Data Recorder

The aircraft was equipped with Honeywell solid state FDR with the information as follows:

Manufacturer : Honeywell

Type/Model : HFR5-D

Part Number : 980-4750-009

Serial Number : 03277

The FDR was successfully downloaded at KNKT facility. The downloaded data was between 1256 UTC until the aircraft stopped at 1258 UTC.

The relevant parameter of the occurrence was as follow:

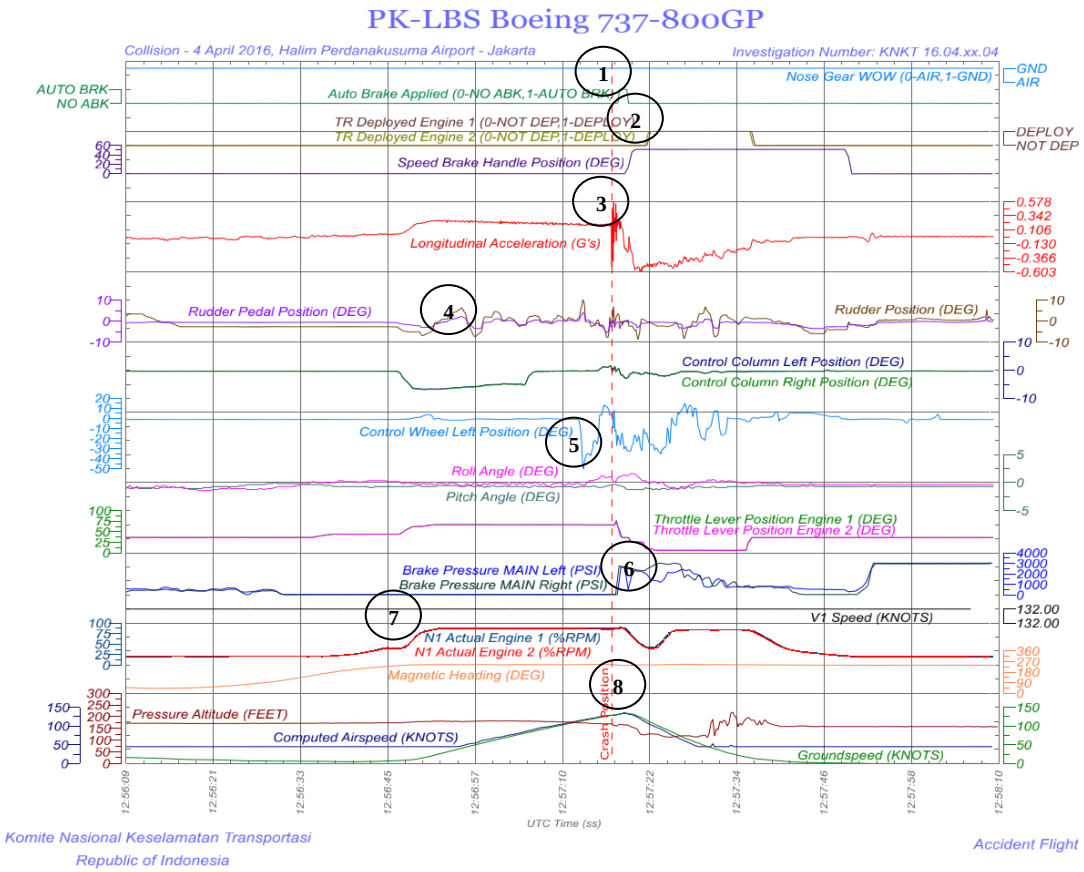

Figure 7: The significant parameter recorded by the FDR

The significant parameters recorded by the FDR indicated in the circles and numbers are as the following numbers below:

1. The auto brake activated just after the impact.
2. The thrust reversers deployed after the impact.
3. The highest longitudinal acceleration in G's shows impact event.
4. The rudder pedal shows positive value, it indicates that the aircraft moved to the right.
5. The control wheel shows negative value, it indicates the aircraft move left after the impact.
6. Both brakes pressure indicators show maximum pressure value after impact.
7. The engine N1's shows increase to approximate 100% then decreasing suddenly after the impact.
8. The aircraft speed increase to approximate 14 knots then decreased after the impact.

Cockpit Voice Recorder

The aircraft was equipped with Honeywell CVR with the information as follows:

Manufacturer : Honeywell

Type/Model : SSCVR

Part Number : 980-6022-001

Serial Number : 16246

The CVR was successfully downloaded at KNKT facility.

1.11.3 The Significant Communication from Cockpit Voice Recorder

The excerpt below was the significant communication from 12:45:30 UTC until12:59:57 UTC.

Note:
P1: PIC
P2: SIC
FA: flight attendant
BTK: ID 7703 pilot
TWR: Halim Tower controller
DEP1: departure traffic on parking stand B-5 under control by Halim Tower controller
DEP2: departure traffic on parking stand B-7 under control by Halim Tower controller
LDG 1: the first landing traffic under control by Halim Tower controller
LDG 2: the second landing traffic under control by Halim Tower controller
RAAS: Runway Awareness and Advisory System

Time (UTC)	From	To	Communication
12:45:30	TWR	BTK	Issued pushback clearance
12:48:11	P2	TWR	Reported ready for taxi
12:48:14	TWR	BTK	Issued taxi clearance
12:48:59	TWR	LDG 1	Held landing traffic on taxiway “A” to give way towing-aircraft movement on parking stand B-1
12:49:53	TWR	BTK	Issued departure clearance
12:50:11	TWR	BTK	Held ID 7703 on taxiway “C” due to another landing traffic (LDG 2)
12:51:17	TWR	LDG 1	Instructed to continue slow down taxi from taxiway “A” as the towing aircraft just leaving parking stand B-1
12:52:23	TWR	DEP 1	Held the departure traffic on parking stand B-5 (DEP 1) for pushing back
12:52:29	TWR	BTK	Issued clearance for continuing backtrack runway 24 after LDG 2 landed and passed taxiway “C”
12:53:46	TWR	DEP 2	Held another departure traffic on parking stand B-7 (DEP 2) for pushing back

12:54:16	TWR	LDG 2	Instructed to exit runway and continue taxi to parking stand B-2
12:54:43	TWR	DEP 1	Instructed to push back with observing LDG 2 taxiing to parking stand B-2
12:56:05	P2	TWR	Reported lining up runway 24 and ready for departure
12:56:10	TWR	BTK	Issued take of clearance
12:56:17	TWR	DEP 1	Reissued instruction to push back
12:56:32	DEP 2	TWR	Requested push back clearance
12:56:36	TWR	DEP 2	Held DEP 2 for pushing back due to DEP 1 pushing back on parking stand B-5
12:57:08	P2	P1	Asked P1 that he saw something on the runway
12:57:14	RAAS		V1
12:57:14			Noisy sound heard
12:57:28	P2	TWR	Reported the flight was aborted
12:57:30	TWR	BTK	Acknowledged the aborted takeoff from ID 7703
12:57:39	P1	FA	Announced "ATTENTION GROUND STATION" twice
12:57:55	P1	FA	Instructed flight attendants to conduct passenger evacuation from the right side
12:58:03	FA		Shouted passengers to expedite the evacuation
12:58:09	P1	P2	Asked P2 concerning to the flap operation
12:58:28	P1	P2	Confirmed whether they had takeoff clearance from TWR and affirmed by P2
12:58:53	FA		Reported to pilots that the evacuation has completed
12:59:11	P1	P2	Confirmed to P2 whether they had takeoff clearance from TWR and affirmed by P2
12:59:24	P1	P2	Instructed to contact TWR for reporting the evacuation process
12:59:38	P2	TWR	Informed they conducted evacuation on runway and requested assistance
12:59:57	TWR	BTK	Answered the request by "Ok, block runway"

1.12 Wreckage and Impact Information

ID 7703

The left wing ID 7703 collided with left wing towed aircraft at approximately 850 meters from the beginning runway 24. The ID 7703 was approximately 400 meters from towed aircraft with heading approximately 230°.

The left wingtip was found at approximately 200 meter behind the ID 7703 near the taxiway "H" while another part (winglet) was found approximately 300 meters behind the ID 7703.

Both engines and Auxiliary Power Unit (APU) fire extinguishers were activated by the pilot.

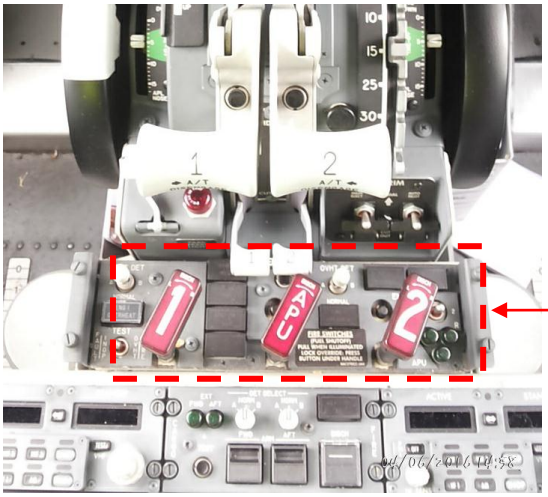

Figure 8: The ID 7703 fire extinguishers activated

The Towed Aircraft

The towed aircraft was approximately 100 meters from taxiway "G" with heading approximately 80°. The nose wheel and right main wheel were at the runway shoulder.

The detached left wing was found approximately 17 meters behind the towed aircraft.

The horizontal stabilizer is connected to the vertical stabilizer which damaged. The stabilizers were found approximately 30 meters behind the towed aircraft.

The illustration of wreckage distribution is as follows:

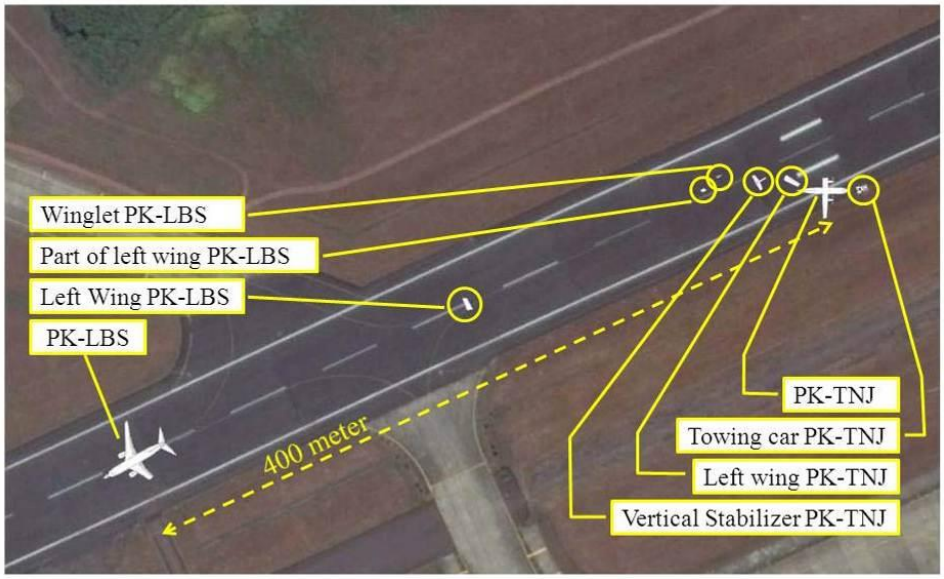

Figure 9: The wreckage distribution superimposed in Google earth

1.13 Medical and Pathological Information

No medical or pathological investigations were conducted as a result of this occurrence, nor were they required.

1.14 Fire

The observation on the wreckage found there were burned parts on the left wing and the detached wingtip of the ID 7703 and the damaged stabilizer of the towed aircraft.

The detail information of the fire will be included in the final report.

1.15 Survival Aspects

The Rescue and Fire Fighting Service (RFFS) arrived in the occurrence site within two minutes after crash bell activation and discharged the extinguisher agent foam to the left wing of ID 7703 and the other foam tender extinguished the fire on the towed aircraft.

All ID 7703 escape slides were deployed by the flight attendants and the passengers were evacuated through the escape slides safely. The passengers and the crew then transported to the main terminal by bus.

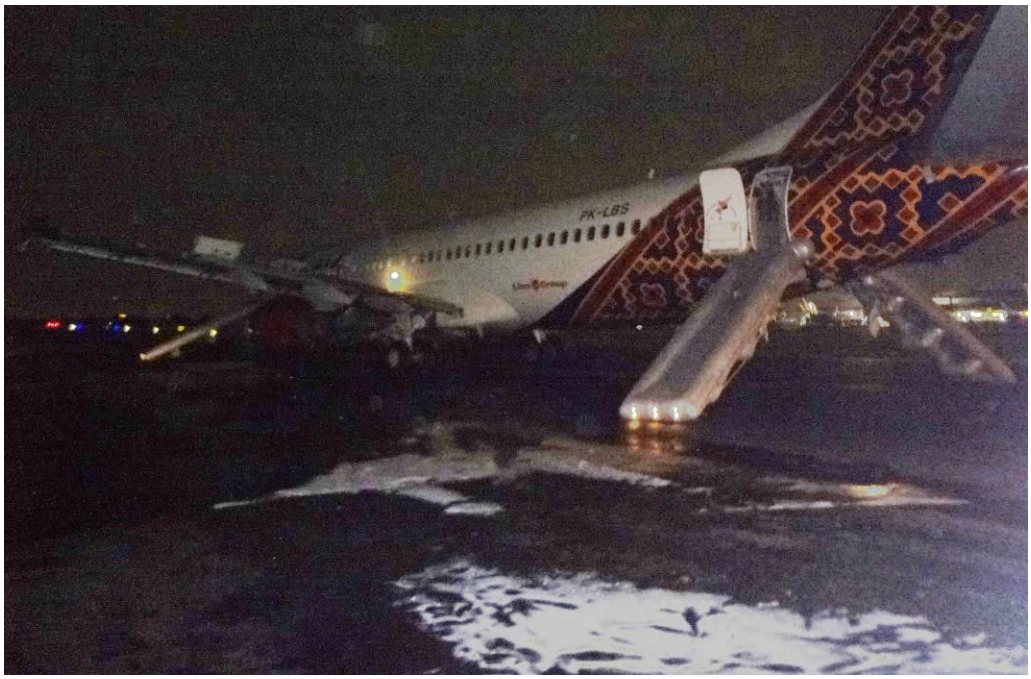

Figure 10: The ID 7703 deployed escape slides

1.16 Tests and Research

Any test and research will be included in the final report.

1.17 Organizational and Management Information

1.17.1 PT. Batik Air Indonesia

The ID 7703 was operated by PT. Batik Air Indonesia that had a valid Air Operator Certificate (AOC) number 121-050. The aircraft operator office address is on Lion Office Building B 2nd floor, Lion City Telaga Bestari, Balaraja, Tangerang, Indonesia.

The detail organizational information of the PT. Batik Air Indonesia will be described on the final report.

1.17.2 PT. TransNusa Aviation Mandiri

The towed aircraft was operated by PT. TransNusa Aviation Mandiri that had a valid Air Operator Certificate (AOC) number 121-048. The aircraft operator office address is on Jalan Palapa 7, Oebobo, Kupang, Indonesia.

The detail organizational information of the TransNusa Aviation Mandiri will be described on the final report.

1.17.3 PT. Jasa Angkasa Semesta

PT. Jasa Angkasa Semesta is an airport service provider that towed the ATR 42-600 aircraft of the TransNusa Aviation Mandiri (the towed aircraft). The company office address is on Wisma Soewarna, Soewarna Business Park 1st Floor, Soekarno-Hatta International Airport, Tangerang, Indonesia.

The detail organizational information of the PT. Jasa Angkasa Semesta will be described on the final report.

1.17.4 AirNav Indonesia District Office Halim Perdanakusuma

The AirNav Indonesia district office of Halim Perdanakusuma is air navigation provider that provided several air traffic services, including aerodrome control service in Halim Perdanakusuma International Airport. The district office address is on Jalan Protokol Halim Perdanakusuma No. 1, Jakarta Timur, Indonesia.

The detail organizational information of the air navigation provider will be described on the final report.

1.17.5 Angkasa Pura II, branch office Halim Perdanakusuma International Airport

The airport is operated by Angkasa Pura II branch office Halim Perdanakusuma International Airport. The office of airport operator is on Halim Perdanakusuma International Airport, Jakarta 13610.

The investigation could not find Standard Operation Procedure that required a towing aircraft operator communication to the controller on the same frequency used for aircraft movement.

The detail organizational information of the airport operator will be described on the final report.

1.18 Additional Information

The investigation is continuing and will include details of the following:

- Relevant ATC and aerodrome issues including the lighting, communication frequency and workload.
- Aircraft towing requirement and procedure.
- Human factors issues.

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 FINDINGS

According to factual information during the investigation, the initial findings and listed as follows:

1. The B737-800NG aircraft flight number ID 7703 was airworthy prior to the occurrence.
2. The ID 7703 crew and the air traffic controllers have valid licenses and medical certificates.
3. Prior to handle the towed aircraft, the towing car driver has handled another aircraft which was towed from north apron via taxiway “C” and “G” then parked at south apron.
4. The ATR 42-600 registered PK-TNJ was being moved from north to south apron using towing car which was via taxiway “C” and planned via taxiway “G”.
5. The towed aircraft was towed without aircraft electrical, therefore all navigation lights, strobe lights and the radio communication were not active.
6. The ID 7703 pilots conducted the communication with the Halim tower controller at frequency 118.6 MHz and the towing car driver conducted the communication to the Halim tower using handheld radio with the frequency 152.7 MHz.
7. The ID 7703 pilots did not know that there was a towing aircraft behind.
8. The Halim tower instructed towing car driver to expedite the tow and to follow ID 7703 several times.
9. When ID 7703 was on rolling takeoff at approximate 80 knots, the SIC saw an object. The PIC took over control and applied the right rudder towards the right side of runway centerline and intended to reject the takeoff, shortly after the pilot felt an impact. The pilot then executed the reject takeoff procedure.
10. The ID 7703 stopped at approximately 400 meter from the towed aircraft which stopped at the left of the runway 24 centerline at approximately 100 meters from taxiway “G”.
11. The PIC noticed fire on the left wing tip and immediately shut down both engines, activated the fire extinguishers of both engines and Auxiliary Power Unit (APU) and commanded to the flight attendant “evacuation from the right”.
12. The Rescue and Fire Fighting Service (RFFS) arrived in the occurrence site within two minutes after crash bell activation and discharged extinguishing agent foam to the left wing of ID 7703 and the other foam tender extinguished the fire on the towed aircraft.
13. All passengers of ID 7703 were evacuated using escape slide and no one injured in this occurrence.
14. The pilots realized that the impacted object was an aircraft being towed after they disembarked the aircraft.
15. The air traffic controller set crew realized that the towed aircraft was on the runway and collided with ID 7703 after asked to the towing car driver.

16. The assistant noticed the last position of the towed aircraft was when the aircraft abeam the tower building. The assistant did not recall any visible light of towed aircraft except the light from the towing car.
17. The lights in the tower cab were illuminated and there were several lights reflection on the tower glass windows including the view to the direction of the beginning runway 24.
18. The pilot stated that during line up, the lights surround the turn pad were very bright and affected his forward vision for a short time.
19. The published Aeronautical Information Publication (AIP) Volume I Amendment 28, Halim has runway length of 3,000 meters and was displaced 200 meters.
20. The investigation could not find Standard Operation Procedure that required a towing aircraft operator communication to the controller on the same frequency used for aircraft movement.

3 SAFETY ACTION

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

The KNKT also had been informed several corrective actions responding to the KNKT safety recommendations issued prior to publishing this preliminary report.

3.1 PT. Batik Air Indonesia

The safety actions conducted by PT. Batik Air Indonesia related to runway incursion mitigation, ground movement precaution and black out vision recovery.

The summaries of the safety action are as follows:

On 7 April 2016, issued notice to pilot number 009/IV/2016 described:

Runway Incursion Mitigation Review

According to incursion event PK-LBS Batik Air on April 4th, 2016 here we remind you to review RUNWAY INCURSION refers to Batik Operation Manual Part A Rev: 02 Issued: 02 date March 14th, 2016 Chapter 8.3.1.8 point A, B, C, D, E. Specially point C to mitigate risk as attached on this notice, otherwise to follow company email from Chief Pilot on April 5th, 201 6 about "Requesting Information Ground Traffic" to ATC Halim during before taxing specially night operation.

On 10 April 2016, issued safety circular number 06/SSQ/SC/IV/2016 described:

Based on PK-LBS serious incident, SSQ Directorate emphasis all operation staff to always implement all tasks in accordance with Standard Operating Procedure (SOP). Besides, SSQ give safety precaution in ground movement as follows:

a. *Pilot:*
   i. *Ensure ground traffic before and during taxi*
   ii. *Performed visual check of runway and traffic condition before enter to the active runway*
   iii. *To ensure the runway was clear before takeoff*
   iv. *In any doubt of traffic, contact the ATC controller before continue movement*
b. *Ground Handling*
   i. *Coordinate with the pilot to ensure the traffic status before push back*
   ii. *Always communicate with the same frequency with ATC controller in any towing aircraft*
   iii. *Ensure that clearance had been approved by ATC controller before push back or towing the aircraft*
   iv. *Use the same frequency with ATC controller in any movement of towing car in the maneuvering area*
c. *FOO*
   i. *To monitor the aircraft and traffic movement in the ground and air.*
   ii. *In any problem regarding the traffic or movement, contact the Aircraft Movement Control (AMC) or related department to find problem solving.*

On 18 April 2016, issued notice to pilot number 010/IV/2016 described:

Delay for Takeoff for due to Black out Vision Recovery

In regard the condition of night take off on runway 24 and to avoid black out in vision caused by high intensity of approach light in dark environment during turning in to position on runway 24 Halim Perdanakusuma, pilot required to delay the take off until the eyes back to normal adaptive environment before call ready for departure.

3.2 PT. TransNusa Aviation Mandiri

On 14 April 2016, PT. TransNusa Aviation Mandiri informed to the Komite Nasional Keselamatan Transportasi related to safety action taken as follows:

1. Issued Safety Notice number SN/001-IV/2016 dated 7 April 2016 described:
    a. Improve the situational awareness for all pilots especially during takeoff and landing at Halim Perdanakusuma and other airports.
    b. To use the same active frequency during movement in the maneuvering area.
    c. Engineer requires using VHF hand held radio as a back-up communication during towing.
    d. To conduct the towing procedure refreshing course for all engineers.
    e. To include the towing procedure from Aircraft Maintenance Manual (AMM) in the TransNusa Aviation Mandiri (TAM) procedure.
    f. To conduct any task in according with approved procedures.
2. Issued notice to pilot number 002/OPS/TAM/IV/2016 dated 7 April 2016, described:
    a. To ensure the runway is clear from any traffic, animal or foreign object after receiving takeoff clearance from air traffic controller.
    b. Improve the awareness of any obstacle during taxi.
    c. To follow the air traffic controller instruction and recheck prior to executing any instruction.
3. Issued Quality Notice number QN-TAM/018/IV/2016 dated 11 April 2016, described:
    a. *During pushback and towing, engineer must refer to Aircraft Maintenance Manual (AMM) Chapter 9 on each aircraft type, especially to switch "ON" the Navigation and Anti Collision Light (by night only).*
    b. *If towing is performed with the unavoidable deviation from the AMM due to the specific reason, engineer must refer to the approved internal documents issued by Quality or Technical Service such as Quality Instruction or Engineering Instruction.*

c. *ATC permission to tow must be obtained by engineer in charge who sit in the cockpit using VHF Comm which installed on the aircraft with normal ATC frequency. In case on the certain airport, the communication is required only between ground handling and ATC using the specific frequency, engineer should monitor in the normal ATC frequency by the VHF Com on the aircraft or GH operator.*

d. *Engineer should refuse to start towing when any other aircraft is still on the runway. If AMC force the aircraft to enter the runway and coincide with the other aircraft, engineer should request 'follow-me' car to guide the aircraft passing clear of the runway.*

3.3 AirNav Indonesia

Responding to KNKT safety recommendation the AirNav Indonesia issued safety notice addressed to all air traffic control units as follows:

a. Required all towing aircraft to switch on the navigation lights.

b. Required all towing aircraft to communicate in published tower frequency.

c. Required all vehicle without radio communication entering manoeuvring area shall be guided by "follow me car".

d. Required air traffic controller to record towing movement on the flight progress strip.

e. Required to reduce the lights intensity in the tower cab while providing air traffic services at night.

4 SAFETY RECOMMENDATIONS

Referring to the initial information, the Komite Nasional Keselamatan Transportasi had issued safety recommendations number KNKT/001/IV/REK.KU/2016 on 7 April 2016 to address the identified safety issues. The recommendations were as follows:

4.1 AirNav Indonesia District Office Halim Perdanakusuma

- **04.A-2016-51.1**

  To develop procedure for all aircraft movement on the manoeuvring area including the aircraft movement without aircraft own power, to communicate with air traffic controller on the same frequency.

- **04.A-2016-52.1**

  To evaluate the current lighting of tower cab to prevent glare that may distract controller view.

- **04.A-2016-53.1**

  To remind the ATC controller to maintain continues watch the aircraft movement on the manoeuvring area, especially when issued air traffic control clearance.

4.2 AirNav Indonesia District Office Halim Perdanakusuma and Angkasa Pura II Brach Office Halim Perdanakusuma International Airport

- **04.B-2016-54.1**

  To develop procedure for vehicle and aircraft on the manoeuvring area shall be equipped with serviceable lights visible by air traffic controller.

On 26 April 2016, KNKT issued additional safety recommendation number KNKT/002/IV/REK.KU/2016 as follows:

- **04.B-2016-57.1**

  To inform the aircraft operators to initiate takeoff from the threshold runway 24 of Halim Perdanakusuma International Airport

4.3 Directorate General of Civil Aviation

- **04.R-2016-55.1**

  To review a requirement for all aircraft movement on the manoeuvring area including the aircraft movement without aircraft own power, to communicate with air traffic controller on the same frequency.

- **04.A-2016-56.1**

  To develop procedure for vehicle and aircraft on the manoeuvring area shall be equipped with serviceable lights visible by air traffic controller.

5 APPENDICES

5.1 Notice to Pilot Number: 009/IV/2016

NOTICE TO PILOT

Cat : Compulsory
No : 009/IV/2016

RUNWAY INCURSION MITIGATION REVIEW

Applicability : All Pilots
Effective Date : April 7th, 2016
Expired Date : Permanent
Distribution List : Crewnet, Notice Book, and Display Board

Dear All Pilots,

According to incursion event PK-LBS Batik Air on April 4th, 2016 here we remind you to review **RUNWAY INCURSION** refers to **Batik Operation Manual Part A** Rev: 02 Issued: 02 date March 14th, 2016 **Chapter 8.3.1.8 point A, B, C, D, E. Specially point C to mitigate risk** as attached on this notice, otherwise to follow company email from Chief Pilot on April 5th, 2016 about "Requesting Information Ground Traffic" to ATC Halim during before taxing specially night operation.

Thank you for your attention.

5.2 Safety Circular Number: 06/SSQ/SC/IV/2016

Batik air Safety, Security, and Quality	SAFETY, SECURITY AND QUALITY DIRECTORATE	06/SSQ/SC/IV/2016
		10 04 2016
	SAFETY CIRCULAR	Page 1/2

Date of effectiveness	:	April 10th, 2016
Distribution list	:	DZ,DO,DA,OF,OS,GO
Applicability	:	Pilots, Ground Handling, FOO
Prepared by	:	
Approved by	:	
Subject	:	**Safety Precaution in Ground Movement**

All Related Departments/Units,

On April 4th 2016, Batik Air Boeing B737-800, registration PK-LBS route HLP – UPG with flight number BTK 7703 experienced runway incursion at HLP. During take-off roll, the aircraft collided with Transnusa ATR 42-600, that was being towed on the runway. The Pilot immediately aborted the take-off and the aircraft came to a stop at 1633 meter from threshold of runway 24. All 49 passengers and 7 crews were evacuated safely. No fatality in this incident but Batik Air L/H wing was burned and broken.

Based on PK-LBS serious incident, SSQ Directorate emphasis all operational staff to always implement all tasks in accordance with Standard Operating Procedure (SOP). Besides, SSQ give safety precaution in ground movement as follows:

a. Pilot :
   1. To ensure ground traffic position before and during taxi.
   2. To visually check runway condition and traffic before entering active runway.
   3. To ensure the runway is clear before initiating the takeoff roll.
   4. If traffic is in doubt, please confirm to ATC before continuing the movement.

b. Ground Handling
   1. To always coordinate with pilot for ensuring the traffic position before commencing the push back.
   2. To always use the same radio frequency with tower frequency in towing aircraft.
   3. Traffic information and clearance must be received before commencing the towing.
   4. Individual towing car movement in crossing active runway, must use the same radio frequency with tower.

c. FOO
   1. To always monitor aircraft movement and the traffic in the ground or in the air.
   2. If problem existed, to be proactive in coordinating with AMC (Aircraft Movement Control) or other respective department to solve the problem.

5.3 Notice to Pilot Number: 010/IV/2016

NOTICE TO PILOT

Cat : Compulsory
No : 010/IV/2016

Delay For Take Off for due to Black Out Vision Recovery

Applicability	:	All Pilots
Effective Date	:	April 18th, 2016
Expired Date	:	Permanent
Distribution List	:	Crewnet, Notice Book, Display Board, and E-mail

Dear All Pilot,

In regard the condition of night take off on runway 24 and to avoid black out in vision caused by high intensity of approach light in dark environment during turning in to position on runway 24 Halim Perdana Kusuma, pilot required to delay the take off until the eyes back to normal adaptive environment before call ready for departure.

Thank you for your attention.

5.4 Safety Notice Number: SN/001 – IV/2016

TransNusa

SAFETY DEPARTMENT

SAFETY NOTICE

No	:	SN/001 – IV/2016
Attn to	:	Pilot, Engineer, Flight Operation, Ramp Personnel, Ground Handling Agent
Date	:	07 April 2016
Status	:	High
Effective Date	:	07 April 2016
Cc	:	BOD
Subject	:	Kewaspadaan pada saat proses towing (pemindahan pesawat)

Terkait kejadian accident tertabraknya pesawat ATR TransNusa PK-TNJ oleh pesawat Batik Air pada hari Senin, pada saat towing sekitar pukul 19:56 di Bandara Halim Perdanakusuma, dengan ini Departemen Safety mengeluarkan Safety Notice terkait kejadian tersebut sebagai berikut:

1. Seluruh Pilot pada saat on duty agar meningkatkan situational awareness terutama pada saat take off dan landing di HLP khususnya dan bandara-bandara lain yang diterbangi PT. TransNusa Aviation Mandiri.
2. Pada saat aircraft towing agar mempergunakan radio frequency yang dipergunakan oleh seluruh pihak yang terlibat pada area pergerakan bandara, sehingga bisa saling memonitor.
3. Pihak Engineer TransNusa Aviation Mandiri agar ikut menggunakan VHF Handy Talky untuk membackup komunikasi pada saat proses towing (tidak hanya mengandalkan ke pihak Operator Ground Handling).
4. Seluruh Engineer/ EOB agar segera melaksanakan Refreshing Course terkait dengan aircraft towing procedure sesuai dengan AMM TransNusa Aviation Mandiri.
5. Memasukkan prosedur towing kedalam prosedur TAM sesuai AMM.
6. Melaksanakan tugas sesuai prosedur yang telah ditetapkan.

Think Safety, Fly safely.

5.5 Safety Notice Number: EDR.13.01/00/LPPNPI/04/2016/001

AirNav Indonesia

Kantor Pusat
Perum LPPNPI
Gedung AirNav Indonesia
Jalan Ir.H. Juanda Tangerang 151.
Banten - Indonesia
Telp : 021-55915000
Fax : 021-55915100
www.airnavindonesia.co.id

SURAT EDARAN

NOMOR : EDR.13.01/00/LPPNPI/04/2016/001

TENTANG

PENINGKATAN KESELAMATAN PENERBANGAN DI AREA MANOUVERING

1. Untuk meningkatkan keselamatan penerbangan di area manouvering diperlukan kewaspadaan tentang pergerakan pesawat di Apron. Runway. Taxiway dan Data Pergerakan Pesawat.

2. Terkait butir 1 (satu) diatas. disampaikan kepada seluruh Pimpinan KPNP untuk melakukan hal-hal sebagai berikut :
   a. Mengevaluasi SOP untuk mengeliminasi hazard;
   b. Mewajibkan semua pesawat yang towing untuk menghidupkan Navigation Light;
   c. Mewajibkan semua pesawat yang towing untuk melakukan komunikasi melalui radio komunikasi resmi (tower frequency);
   d. Mewajibkan semua kendaraan yang masuk area manouvering dan tidak memiliki radio komunikasi agar mengikuti "*follow me car*";
   e. Mewajibkan petugas ATC mencatat pergerakan Towing Car di Strip Marking mulai dari awal hingga akhir selesai beroperasi;
   f. Selama memberikan Pelayanan Lalu Lintas Penerbangan di malam hari, lampu di dalam tower cabin harus diredupkan.

3. Demikian Surat Edaran ini dibuat untuk dapat dilaksanakan dengan sungguh-sungguh.