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KOMITE NASIONAL KESELAMATAN TRANSPORTASI

Runway Incursion Investigation Report

**Indonesia Air Asia and Batik Air
Airbus A 320 (PK-AXG) and
Boeing B 737-900ER (PK-LBH)
Adisutjipto International Airport, Yogyakarta
Republic of Indonesia
20 November 2013**



NATIONAL TRANSPORTATION SAFETY COMMITTEE
REPUBLIC OF INDONESIA
2014



This Final 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 NTSC 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).

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ABBREVIATIONS AND DEFINITIONS

AGL	:	Above Ground Level
AIP	:	Aeronautical Information Publication
AirNAv	:	Air Navigation
APP	:	Approach
ATC	:	Air Traffic Control
ATIS	:	Aerodrome Terminal Information Services
ATPL	:	Airline Transport Pilot License
ATS	:	Air Traffic Service
ATZ	:	Air Traffic Zone
BMKG	:	<i>Badan Meterologi Klimatologi dan Geofisika</i> (Metrological Climatology and Geophysical Agency)
°C	:	Degrees Celsius
CASR	:	Civil Aviation Safety Regulation
CPL	:	Commercial Pilot License
CVR	:	Cockpit Voice Recorder
DA	:	Decision Altitude
DGCA	:	Directorate General of Civil Aviation
FCOM	:	Flight Crew Operations Manual
FDR	:	Flight Data Recorder
ft	:	Feet
hPa	:	Hectopascals
Hrs	:	Hours
IAA	:	Indonesia Air Asia
ICAO	:	International Civil Aviation Organization
IIC	:	Investigator in Charge
ILS	:	Instrument Landing System
Kg	:	Kilogram(s)
Km	:	Kilometer(s)
kts	:	Knots (nm/hours)
KNKT (NTSC)	:	<i>Komite Nasional Keselamatan Transportasi</i> (National Transportation Safety Committee)
NOTAM	:	Notice to Airmen
S/N	:	Serial Number
SOP	:	Standard Operating Procedure
TCP	:	Transfer Control Point
TCAS	:	Terrain Collision Avoidance System
TWR	:	Tower
UTC	:	Universal Time Coordinate

INTRODUCTION

SYNOPSIS

On 20 November 2013, an Air Bus A320 operated by Indonesia Air Asia (IAA) was on schedule passenger flight from Adisutjipto Airport, Yogyakarta to Ngurah Rai Airport, Bali, with flight number AWQ 8411.

At 00:36 the AWQ pilot requested taxi clearance and was cleared to taxi to holding point runway 27 via November Two (N2) by Adi Tower controller. The pilot reconfirm that the taxi way was N2 and requested to taxi via November Three (N3) taxiway. The Adi Tower controller reconfirm that the taxi way was N2 and continued by providing ATC clearance.

The pilot thought that they were cleared to taxi to holding point runway 27 which was located on the taxiway N3, close to the runway 27 threshold. There was no other traffic communicated with Adi Tower controller.

Prior the aircraft entered the runway the PIC shouted that there was an aircraft on final. Almost at the same time Adi Tower controller instructed to AWQ 8441 pilot to hold at present position. The PIC instinctively selected the throttles to reverse and applied brake to stop the aircraft and if possible moved backward. The aircraft stopped with the nose section 16 meters passed the yellow marking line of N2 taxiway on approximate heading 170.

A Boeing B737-900 operated by PT Batik Air on flight number ID 6360 was on regular passenger flight from Soekarno-Hatta, Airport Jakarta to Adisutjipto Airport Yogyakarta and was under control Yogya Approach controller.

The Yogya Approach controller advised to the pilot that runway was clear and gave clearance to land if the runway insight.

The BTK pilot reported that the runway insight when the aircraft was on 3.5 miles to touch down. The Yogya Approach controller advised the pilot to contact Adi Tower controller after landing.

After saw that the AWQ aircraft has entered the runway, while the BTK aircraft was approximately at 600 feet, the Adi Tower controller advised to the Yogya Approach controller to instruct BTK pilot to go around. The instruction was not passed to BTK pilot with consideration that the BTK aircraft was on short final and a go around might jeopardized the safety of the flight.

The Adi Tower controller instructed BTK pilot to go around, however this instruction was not acknowledge by BTK pilots.

Just after touched down, the BTK pilot saw that of the AWQ aircraft was on taxiway N2 and the nose section had entered the runway. The BTK pilot then applied the maximum manual braking and full thrust reverse and the aircraft stopped at approximately 100 meters to the AWQ aircraft position.

Refer to the calculation the required landing distance for medium braking action was 6,614 feet or 2,016 meters and for good braking action was 4,813 feet or 1,467 meters. The

landing distance of the BTK aircraft was approximately 1650 meters. The pilot action had avoided a collision between aircrafts.

The investigation determined contributing factors involve in this occurrence were:

- Misinterpretation between pilots and controller related to the position of holding point runway 27 and the taxi clearance had never been clearly clarified.
- There was no transfer of control from Yogya Approach controller to Adi Tower controller and the landing clearance for the BTK flight was issued by Yogya Approach controller resulting to the initiative instruction from Adi Tower controller to BTK pilot to go around was not acknowledged by BTK pilots.

During the investigation, the KNKT has been informed safety actions taken by Batik Air and Indonesia Air Asia that were considered relevant to improve of the particular condition.

The KNKT issued several safety recommendations to address safety issues identified during the investigation to AirNav Indonesia and Directorate General of Civil Aviation (DGCA).

1 FACTUAL INFORMATION

1.1 History of the Flight

On 20 November 2013, the weather condition at Yogyakarta was heavy rain and became below minima for approach. Between 0002 UTC - 0005 there were two aircrafts rejected the landing and diverted to alternate airports. The airport was closed for operation between 0003 UTC – 0030 UTC.

After the weather improved the airport operation was re-opened at 0035 UTC. The ATC reported that the actual weather was rain following by visibility 6 km, cloud broken at 1800 feet, temperature 23°C, dew point 22° C and QNH 1008 mbs.

An Air Bus A320 operated by Indonesia Air Asia (IAA) was on schedule passenger flight from Adisutjipto Airport, Yogyakarta to Ngurah Rai Airport, Bali, with flight number AWQ 8411¹. The aircraft was parked on parking bay number 4 and was pushed back heading east. At 0036 UTC the AWQ pilot requested taxi clearance and was cleared to taxi to holding point runway 27 via November Two (N2) by Adi Tower controller. The pilot reconfirm that the taxi way was N2 and requested to taxi via November Three (N3) taxiway. The Adi Tower controller reconfirm that the taxi way was N2 and continued by providing ATC clearance.

The aircraft taxied as instructed via N2. The pilot assumed that they were cleared to taxi to holding point runway 27 which was located on the taxiway N3, close to the runway 27 threshold. There was no other traffic communicated with Adi Tower controller.

Prior the aircraft entered the runway the SIC performed takeoff procedures including switched on the TCAS to TA/RA position. At 0039 UTC, the PIC shouted that there was an aircraft on final. Almost at the same time Adi Tower controller instructed to AWQ 8441 pilot to hold at present position. The PIC instinctively selected the throttles to reverse and applied brake to stop the aircraft and if possible moved backward. The aircraft stopped with the nose section passed the yellow marking line of November Two taxiway on approximate heading 170.

A Boeing B737-800 operated by PT Batik Air on flight number ID 6360² was on regular passenger flight from Soekarno-Hatta, Jakarta Airport to Adisutjipto Airport Yogyakarta. At 0038 UTC the aircraft has been established on localizer runway 27 at 4000 feet and was under control Yogya Approach controller.

The significant excerpts of the ATC ground based recorder in Yogya Approach

¹ AWQ 8411 operated by PT Indonesia Air Asia will be mentioned as AWQ

² ID 6360 operated by PT Batik Air will be mentioned as BTK

radio frequency (Area I) and Adi Tower radio frequency (Area II) were as follows:

Communication between Batik Air Flight 6360 (BTK) and Yogya Approach controller (Area I)

- At 00:38 UTC The aircraft was on heading 110°. The pilot was instructed to maintain 4000 feet and to report when establish on localizer. The pilot acknowledged the instruction.
- At 00:38 UTC Yogya Approach controller informed that that there was another aircraft at approximately 25 Nm ahead and another information that there was an information from previous pilot landed on runway 27 informing that there was tail wind approximately 9 knots on landing. The Yogya Approach controller then requested to the pilot to call when runway insight. This information was acknowledged by the pilot acknowledged.
- At 00:39 UTC Yogya Approach controller requested the pilot to report when runway insight. The pilot read back and would call when the runway insight.
- At 00:39 UTC Yogya Approach controller advised to the pilot that runway was clear and gave clearance to land if the runway insight. The pilot acknowledge that they were cleared to land when the runway insight.
- At 00:39 UTC The BTK pilot reported that the runway insight. The Yogya Approach controller acknowledged and informed that the aircraft was on 3.5 miles to touch down, then provided the clearance to land and advised the pilot to contact Adi Tower controller after landing.
- At 00:40 UTC The BTK pilot read back and acknowledged the clearance and instruction from Yogya Approach Controller.

The communication excerpts of Adi Tower controller (TWR), AWQ pilots and BTK pilots (Area II)

- At 00:36 UTC Adi Tower controller provided a taxi clearance for AWQ pilot to taxi to holding point runway 27 via November Two (N2). The AWQ pilot reconfirmed the clearance and the Adi Tower controller had acknowledged by giving additional ATC clearance.
- At 00:38 UTC The AWQ aircraft started to taxi.
- At 00:39 UTC Adi Tower controller instructed the AWQ pilot to hold at present position and instructed BTK pilot to go around.
- At 00:39 UTC Adi Tower controller informed the AWQ pilot that there was an aircraft on short final.
- At 00:42 UTC The AWQ pilot reconfirmed to Adi Tower controller to ensure that they received the clearance to enter runway 27 via N2.
- At 00:42 UTC Adi Tower controller confirmed and provided another instruction to hold on N2.

At 00:43 UTC The BTK pilot contacted the Adi Tower controller.
At 00:43 UTC The Adi Tower controller informed the BTK pilot, that the landing time was 00:42 UTC
At 00:44 UTC The BTK pilot complained that the runway was not clear when they landed.

The BTK pilot was able to see the runway at approximately 1500 feet and also able to see an aircraft taxi out to N2.

During the interview, the Adi Tower controller on duty informed that when the BTK aircraft was passing 600 feet, the Adi Tower controller advised to the Yogya Approach controller to instruct BTK pilot to go around. The instruction was not passed to BTK pilot with consideration that the BTK aircraft was on short final and a go around might jeopardized the safety of the flight.

Just after touched down, the BTK pilot saw that the AWQ aircraft was on taxiway N2 and the nose section had entered the runway. The BTK pilot then applied the maximum manual braking and full thrust reverse and the aircraft stopped at approximately 100 meters to the AWQ aircraft position.

The Adi Tower controller had instructed AWQ pilot to return to apron via N3 and park on parking bay number 4, as well as instruction to BTK pilot to proceed to apron via N2.

No one injured in the serious incident.

The observation on the maintenance records indicated that both aircrafts were airworthy, all flight crew were held valid licenses, and all the controllers on duty were certified to conduct the duty.

The ATC ground base recorder was in good quality and contained the communication between the aircrafts and controllers with some background conversations not pertinent to the flight.

1.2 Personnel Information

1.2.1 Pilot in Command AWQ 8411

Gender : Male
Age : 60 years
Nationality : Indonesia
Marital status : Married
License : ATPL
 Date of issue : 10 August 1987
 Aircraft type rating : Airbus A 320
Instrument rating : 19 August 2013
Medical certificate : Class I
 Last of medical : 30 September 2013
 Validity : 30 March 2013
 Medical limitation : Shall wear lenses that correct for distant vision and posses glasses that correct for near vision

Last proficiency check : 19 August 2013

Flying experience

Total hours : 20,000 hours
Total on type : 5,000 hours
Last 28 days : 102 hours 05 minutes
Last 7 days : 29 hours 38 minutes
Last 24 hours : 6 hours 18 minutes
This flight : 07 minutes

1.2.2 Second in Command AWQ 8411

Gender : Male
Age : 25 years
Nationality : Indonesia
Marital status : Married
License : CPL
 Date of issue : 4 September 2009
 Aircraft type rating : Airbus A 320

Instrument rating : 26 July 2013
 Medical certificate : Class I
 Last of medical : 8 October 2013
 Validity : 8 October 2014
 Medical limitation : NIL
 Last proficiency check : 26 July 2013

Flying experience

Total hours : 3,100 Hours
 Total on type : 2,900 Hours
 Last 28 days : 71 Hours 49 minutes
 Last 7 days : 23 Hours 1 Minute
 Last 24 hours : 6 hours 18 minutes
 This flight : 07 minutes

1.3 Aerodrome information

The Adisutjipto Airport lay out, received from local airport authority include taxiway N2, NP and N3.

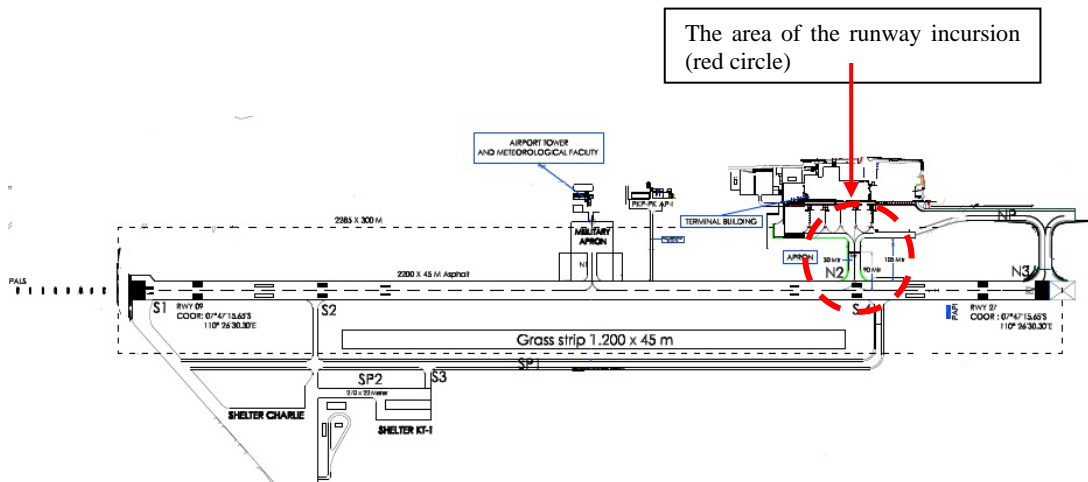


Figure 1: Adisutjipto airport layout the holding position on N2 and N3

According to the current AIP, the runway length was 2200 meter and the width was 45 meters. The distance from the beginning runway 09 to taxiway N2 was 1750 meters.



Figure 2: The taxiway N2 and N3 in the red circle

The November Three (N3) taxiway has been operated on trial condition since 27 September 2012 as stated in the notification to airmen (NOTAM) which was valid up to 14 November 2012.

On 12 December 2012, the second NOTAM was issued for the operation of this taxiway for taxi into apron only, which was valid until 15 January 2013.

On 13 September 2013 a NOTAM was issued contain information of renaming the taxiway and detail taxiway information refer to Aeronautical Information Publication (AIP) Indonesia volume II dated 13 December 2012. The AIP amendment 34, issued on 13 December 2012 included information of the taxiway N3 however, the airport lay out has not been amended to include taxiway NP and N3.

The Adisutjipto airport lay out, taken from JEPPESEN date 20 July 2012; 11-1 which was according the AIP issued 7 September 2009. The JEPPESEN was a navigation chart provider that been used by most of the air operator worldwide, including the Indonesia Air Asia and Batik Air. The JEPPESEN refers to the AIP for updating.

There was no revision of AIP Indonesia for taxiway N3 until the dated of the occurrence.

The responsibility to amendment the AIP Indonesia is the Directorate of Navigation as part of the Directorate General of Civil Aviation (DGCA).

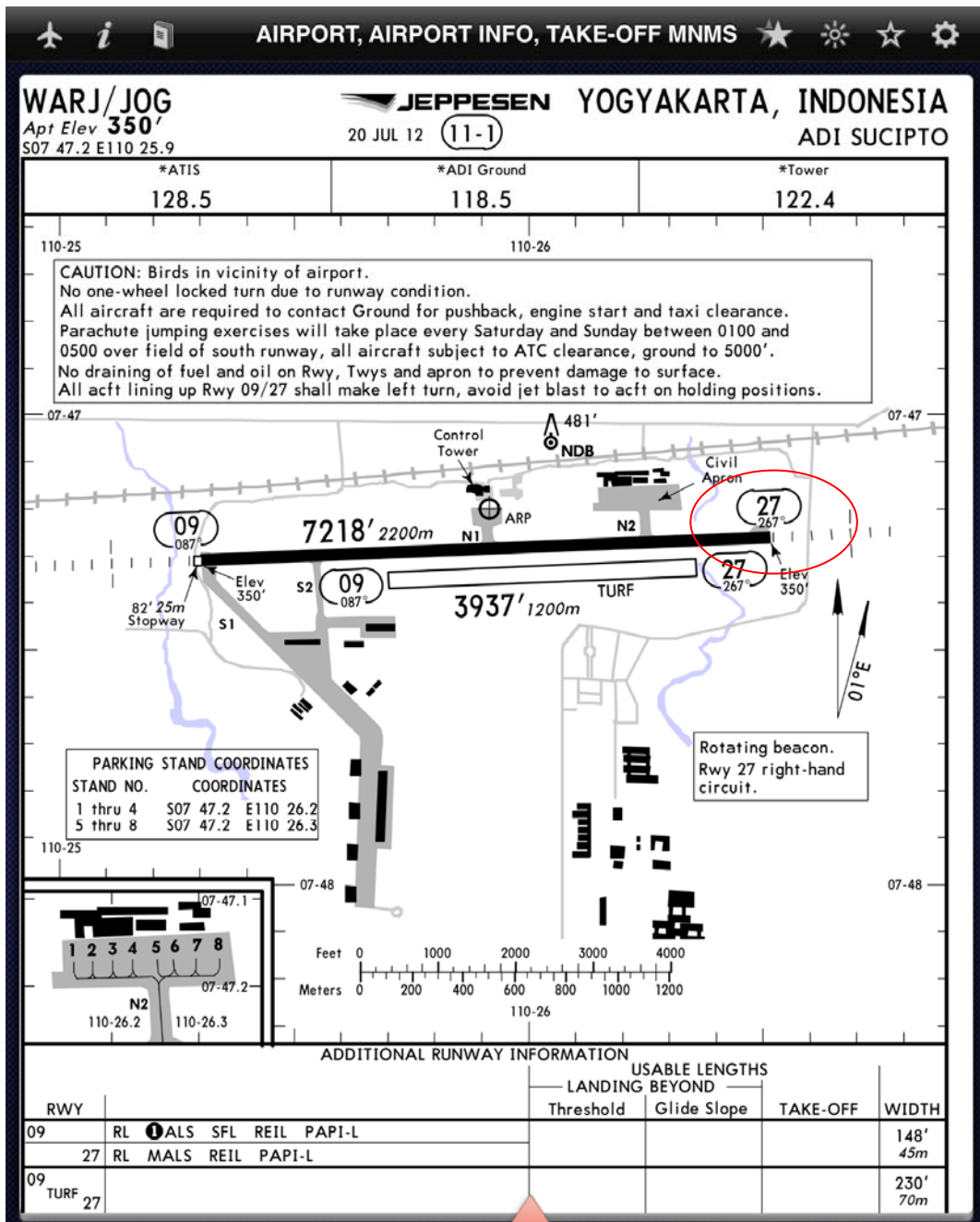


Figure 3: The showed taxiway N2 in the red circle

1.3.1 ICAO Annexes

ICAO Annex 4, Chapter 1. Definitions, Applicability and Availability:

RUNWAY-HOLDING POSITION – A designated position intended to protect a runway, an obstacle limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicle shall stop and hold, unless otherwise authorized by aerodrome control tower.

NOTE: In radiotelephony phraseology, the expression “holding point” is used to designate the runway-holding position.

ICAO Annex 14, Chapter 3. 3.12 *Holding bays, runway-holding positions, Intermediate holding positions and road-holding positions*

General

3.12.1 Recommendation.— Holding bay(s) should be provided when the traffic density is medium or heavy.

3.12.2 A runway-holding position or positions shall be established:

- a) on the taxiway, at the intersection of a taxiway and a runway; and*
- b) at an intersection of a runway with another runway when the former runway is part of a standard taxi-route.*

3.12.3 A runway-holding position shall be established on a taxiway if the location or alignment of the taxiway is such that a taxiing aircraft or vehicle can infringe an obstacle limitation surface or interfere with the operation of radio navigation aids.

1.3.2 AirNav Procedures

Some relevant information contained in the AirNav Indonesia, Standard Operating Procedure (SOP) for Adisutjipto Airport dated 1 April 2013, chapter 12. Coordination Procedures and 12.1 Between Yogyakarta Approach Unit and Adisutjipto Tower Unit are as follows:

12.1.1 Departing aircraft.

a. *For departing aircraft Adi sucipto Tower shall:*

- 1) Request start-up approval and intended level of the aircraft to Yogyakarta APP.*
- 2) Inform Yogyakarta APP the start-up time whenever the pilot request for ATC clearance and or start-up clearance but the aircraft still not ready for start-up.*
- 3) Issue ATC clearance to the pilot of the aircraft after approved altitude can be obtained from Yogyakarta APP.*
- 4) Obtain release clearance to Yogyakarta APP prior giving take-off clearance to the aircraft.*
- 5) Inform Yogyakarta APP the expected time of departure whenever at is anticipated delayed for aircraft to take-off, after release clearance has been obtained.*
- 6) Inform Yogyakarta APP if the aircraft will taxiing back track the runway in use.*
- 7) Inform Yogyakarta APP if the pilot is unable to comply with APP requirements.*
- 8) Inform Yogyakarta APP the airborne time of the aircraft.*

b. *For departing aircraft Yogyakarta APP unit shall:*

- 1) *Issue start-up clearance and also when to delay the start-up time to Adi sutjipto Tower.*
- 2) *Issue expected departure time to Adi sutjipto Tower whenever to hold the aircraft in short of the runway-in-use.*
- 3) *Issue ATC clearance to Adi sutjipto Tower prior the aircraft commence taxiing and such ATC clearance in requested by Adi sutjipto Tower.*

12.1.2 Arriving aircraft

For arriving aircraft Adisutjipto Tower shall.

- 1) *Inform Yogyakarta APP the vacant level by the time receiving informed information.*
- 2) *Inform Yogyakarta APP if any aircraft executing missed-approach and it's reason.*
- 3) *Instructed the missed approach aircraft go around climb straight ahead to 2500 feet.*

12.1.9 Weather below minima operation

Special ATC procedure for operation during weather below minima see Part V, para 5.18.

The investigation found that the Part V of the SOP was blank and did not contain any information.

12.1.11 Transfer of control

- a. *Transfer of control for Air Traffic Control Service in conducted at Transfer Control Point (TCP).*
- b. *The responsibility of air traffic control service the aircraft maintaining altitude 2500 ft or below whenever operating within ATZ will remain under the control of Adisutjipto Tower.*
- c. *Transfer of control point from Tower to APP is at the time the aircraft leaving 2500 ft.*
- d. *Transfer of control point from APP to Tower is at the time the aircraft reaching 2500 ft except for landing arriving IFR flight.*

12.1.12 Transfer of communication

- a. *Transfer of communication responsibility including flight information and alerting service is at the transfer of communication point.*
- b. *Communications service responsibility for aircraft cruising at 2500 ft or below will remain at TWR frequency except when such aircraft operating within the CTR.*
- c. *Transfer of communication Point from TWR to APP is at the time the aircraft leaving 2500 ft, except for:*
 - 1) *IFR departure soon after the aircraft airborne.*
 - 2) *For local-flight intended to fly to Training Area after the aircraft reaching the TRA.*

d. Transfer of Communication Point (TCoP) from APP to TWR is at time the aircraft leaving 2500 ft except for:

- 1) For aircraft executing instrument approach is after the aircraft established Final Approach Course and leaving 2500 ft:

Based on the SOP stated above, it can be concluded that the Adi Tower has authority for communication below 2,500 feet for departure and arrival aircraft.

1.4 Flight Recorders

The aircrafts equipped with Flight Data Recorder (FDR) and Cockpit Voice Recorder (CVR). The CVR of both aircraft has been overwritten due to electrical was powered to the aircraft for several times after the occurrence.

1.4.1 Flight Data Recorder

The FDR of the Air Bus PK-AXG was downloaded in the NTSC facility. The FDR data showed that the average taxi speed was of 6.4kts/hour when entering and on the taxi way N2 and was indicated stopped after 30 seconds of taxi period. The distance travelled during taxi on taxiway N2 was approximately 116 meters.

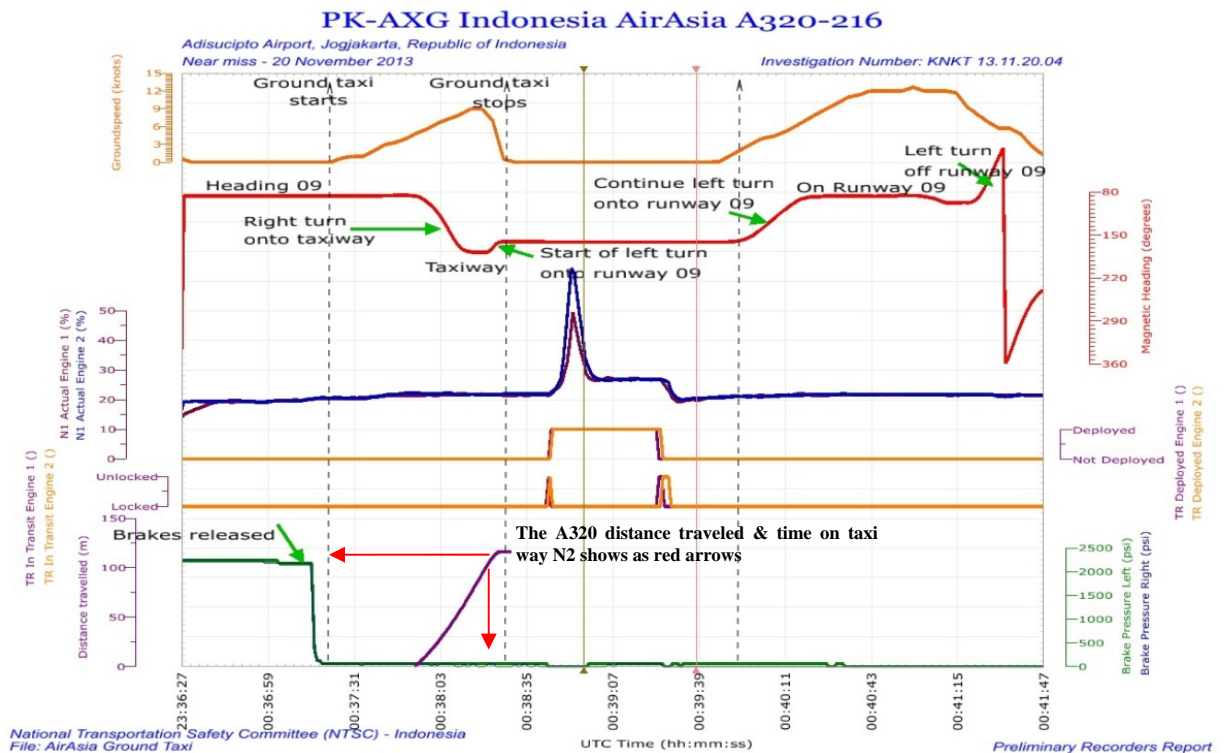



Figure 4: AXG aircraft distance travelled and time on taxi way N2 pointed by the red arrows

1.5 Aircraft Information

1.5.1 B737 900 Normal Configuration Landing Distance

Referring to, the normal configurations landing distance can be referred to Boeing FCOM PI.12. 3.

With flaps 40 and estimated landing weight of 67,369 kgs with assuming a tail wind 10 knots, the normal landing distance can be estimated using tables in figure 5.

737-900ERW/CFM56-7B26 FAA Category H/P Brakes				737 Flight Crew Operations Manual		Performance Inflight Advisory Information						
ADVISORY INFORMATION												
Normal Configuration Landing Distances												
Flaps 40												
BRAKING CONFIGURATION	LANDING DISTANCE AND ADJUSTMENTS (FT)											
	REF DIST	WT ADJ	ALT ADJ	WIND ADJ PER 10 KTS		SLOPE ADJ PER 1%		TEMP ADJ PER 10°C		APP SPD ADJ	REVERSE THRUST ADJ	
	70000 KG LANDING WEIGHT	PER 5000 KG ABOVE/BELOW 70000 KG	PER 1000 FT STD/HIGH*	HEAD WIND	TAIL WIND	DOWN HILL	UP HILL	ABV ISA	BLW ISA	PER 5 KTS ABOVE VREF40	ONE REV	NO REV
Dry Runway												
MAX MANUAL	3020	210/-160	70/100	-110	390	40	-30	70	-70	110	50	100
MAX AUTO	3740	220/-180	90/130	-140	470	0	0	100	-100	180	0	10
AUTOBRAKE 3	5240	350/-300	160/210	-230	770	0	-10	170	-170	290	0	0
AUTOBRAKE 2	6700	480/-420	220/300	-320	1080	60	-110	230	-230	310	90	90
AUTOBRAKE 1	7470	550/-490	250/350	-380	1280	180	-220	260	-260	290	450	670
Good Reported Braking Action												
MAX MANUAL	4120	250/-220	120/160	-190	650	100	-90	120	-120	160	180	390
MAX AUTO	4410	270/-240	130/170	-190	680	100	-80	120	-120	190	200	430
AUTOBRAKE 3	5260	350/-300	160/220	-230	790	30	-20	170	-170	300	10	40
AUTOBRAKE 2	6700	480/-420	220/300	-320	1080	60	-110	230	-230	310	90	90
AUTOBRAKE 1	7470	550/-490	250/350	-380	1280	180	-220	260	-260	290	450	670
Medium Reported Braking Action												
MAX MANUAL	5660	390/-340	180/250	-300	1080	270	-210	180	-180	210	500	1160
MAX AUTO	5770	400/-350	190/260	-300	1090	250	-200	180	-180	240	500	1170
AUTOBRAKE 3	5940	420/-360	190/270	-310	1110	220	-150	190	-200	290	410	1100
AUTOBRAKE 2	6900	490/-430	220/310	-350	1230	190	-180	230	-240	310	230	550
AUTOBRAKE 1	7520	550/-490	250/350	-380	1340	260	-240	260	-260	290	500	840
Poor Reported Braking Action												
MAX MANUAL	7420	550/-480	260/370	-450	1720	660	-430	240	-260	250	1080	2750
MAX AUTO	7440	550/-480	270/380	-450	1720	670	-430	240	-260	260	1090	2760
AUTOBRAKE 3	7500	560/-490	270/380	-460	1730	640	-420	250	-260	270	1100	2780
AUTOBRAKE 2	7860	590/-510	280/390	-470	1770	610	-400	270	-280	300	890	2430
AUTOBRAKE 1	8190	600/-540	290/410	-490	1810	630	-430	280	-290	280	1010	2440

Reference distance is for sea level, standard day, no wind or slope, VREF40 approach speed and two engine detent reverse thrust.
 Max manual braking data valid for auto speedbrakes. Autobrake data valid for both auto and manual speedbrakes.
 For max manual braking and manual speedbrakes, increase reference landing distance by 180 ft.
 For autobrake and manual speedbrakes, increase reference landing distance by 160 ft.
 Actual (unfactored) distances are shown.
 Includes distance from 50 ft above threshold (1000 ft of air distance).
 *For landing distance at or below 8000 ft pressure altitude, apply the STD adjustment. For altitudes higher than 8000 ft, first apply the STD adjustment to derive a new reference landing distance for 8000 ft then apply the HIGH adjustment to this new reference distance.

Figure 5. The Boeing B737 NG FCOM PI.22.3 performance table of landing distance

2 ANALYSIS

The analysis part of this Final Report will discuss the relevant issues resulting in this runway incursion occurrence involving a B737-800 aircraft on landing and A320 on taxi out at Adisutjipto Airport on runway 27.

The investigation determined that there was no issue related to the aircraft and its systems. Therefore the analysis will focus on the following issues:

- Transfer of control and communication
- Taxi Clearance
- Controller coordination
- Go around from 600 feet
- The stopping distance of the landing aircraft

2.1 The Transfer of control and communication

The examination on AirNav Standard Operating Procedure (SOP) subpar 12.1.11, subject Transfer of Control showed that;

- The transfer of control for Air Traffic Control (ATC) Services shall be conducted at Transfer Control Point (TCP). The responsibility of ATC service are to the aircraft maintaining altitude 2500 feet or below whenever operating within Air Traffic Zone (ATZ) will remain under the control of Adi Tower.
- Transfer of control point from Tower to APP for departure aircraft is at the time when the aircraft leaving 2500 feet; and,
- The transfer of control point from APP to Tower for arriving aircraft is at the time the aircraft reaching 2500 feet except for landing arriving IFR flight.

The examination on AirNav SOP subpar 12.1.12 subject; Transfer of Communication, showed that, the Yogya Approach shall transfer to Adi Tower for aircraft executing instrument approach is after the aircraft established Final Approach Course and leaving 2500 ft.

On the day of the occurrence, in fact, parts of the ATC transcript showed:

At 00:39 UTC Yogya Approach controller advised to the pilot that runway was clear and gave clearance to land if the runway insight. The pilot acknowledged that they were cleared to land when the runway insight.

At 00:39 UTC The pilot reported that the runway was insight. The Yogya Approach controller acknowledged and informed that the aircraft was on 3.5 miles to touch down, then provided the clearance to land and advised the pilot to contact Adi Tower controller after landing.

Concerning to the information that the pilot called that the runway was insight at 3.5 miles, the investigation assumed that with normal 3° glide slope the aircraft altitude would be 3° times 3.5 nm or approximately 1050 feet. This indicated that control of the aircraft has not been transferred in accordance with the SOP communication transfer procedure on 12.1.12, where the communication shall be transferred at 2500 feet when established the localizer.

The pilot of aircraft that was taxiing on the ground did not hear any other aircraft communicated in Adi Tower frequency. This condition has made the pilots did not aware of traffic on approach at Adisutjipto Airport.

2.2 Taxi Clearance

As described in ICAO Annex 4, Chapter 1. Definitions, Applicability and Availability:

RUNWAY-HOLDING POSITION – A designated position intended to protect a runway, an obstacle limitation surface, or an ILS/MLS critical/sensitive area at which taxiing aircraft and vehicle shall stop and hold, unless otherwise authorized by aerodrome control tower.

NOTE: In radiotelephony phraseology, the expression “holding point” is used to designate the runway-holding position.

The ICAO Annex 14 stated

3.12.3 A runway-holding position shall be established on a taxiway if the location or alignment of the taxiway is such that a taxiing aircraft or vehicle can infringe an obstacle limitation surface or interfere with the operation of radio navigation aids.

Based on the definition of the ICAO Annexes, runway holding position should be established to all taxiways have alignment with the runway. Adisutjipto Airport has two taxiways align with the runway namely taxiway N2 and N3. The taxiway N3 aligned with the beginning of runway 27 and it could be interpreted as holding point runway 27.

At 00:36 UTC TWR provided the taxi clearance to AWQ pilots to taxi to holding point runway 27 via November Two (N2). The AWQ pilots reconfirmed that the clearance was via N2. Adi Tower controller reconfirmed that the taxi way was N2 and provided ATC clearance. The AWQ pilots acknowledged and read back the clearance.

The AWQ pilot reconfirmed that the clearance was via taxiway was N2. The interview noted that the pilots thought that the holding point runway 27 was located at N3 taxiway, close to the threshold runway 27, and the best way to reach the holding point runway 27 without entering the runway was via N3 taxiway. However the pilots thought did not clearly clarified to the Adi Tower controller.

The Adi Tower controller reconfirmed that the taxiway was N2 with intention of to provide the landing aircraft with full runway distance to land then exit the runway via N3 to apron.

There was no instruction by the Adi Tower controller for AWQ pilot to hold on short runway 27. Furthermore, according to the interpretation of alignment of taxiway N3 and the runway as the holding point runway 27 can be concluded that the AWQ pilot had been cleared to that position via N2 and the runway.

This investigation concluded that the pilot thought related to the position of holding point runway 27 and the taxi clearance provided by the controller never been clearly clarified and resulted to misinterpretation.

The FDR data revealed that the distance travelled on taxiway N2 was 116 meters. Refer to figure 1, the length of taxiway N2 was 100 meters, so that the aircraft was 16 meters inside the runway.

2.3 Controllers Coordination

Refer to the AirNav SOP, the coordination between Adi Tower controller and Yogya Approach controller for departing aircraft can be summarized that the Adi Tower controller shall obtain approval from Yogya Approach controller prior to issue clearance for the engine start up, ATC clearance, takeoff and shall inform whenever an aircraft is about to enter the runway.

The Adi Tower controller did not inform the Yogya Approach controller that the AWQ was about to enter the runway, as the Adi Tower controller assumed that the aircraft would stop prior to enter the runway.

While the BTK aircraft was at approximately 600 feet, the Adi Tower controller advised the Yogya Approach controller to instruct BTK pilot to go around. The reason was due to that the AWQ aircraft had passed the runway holding position marking. However, the Yogya Approach controller did not instruct BTK pilot to go-around as he assumed that the aircraft was on short final and a go-around might jeopardize the safety of the flight.

The Adi Tower controller also instructed the AWQ to hold at present position, and the AWQ pilot stopped the aircraft. However the aircraft had passed the runway holding position marking.

Recognizing that the BTK aircraft continued to approach, the Adi Tower controller instructed the BTK pilot to make go around. The BTK pilot did not reply the instruction and continue to land. It was most likely that BTK pilots were still monitoring the Yogya Approach frequency as the last instruction from Yogya Approach controller was to contact tower after landing.

During the critical phase between 0038 UTC to 0039 UTC a series of ineffective communications occurred such as the following facts:

- The AWQ pilot did not clarify to the Adi Tower controller concerning to the confusion of taxi routing;
- The Adi Tower controller did not instruct the AWQ pilot to stop the aircraft prior to pass the runway holding position marking;
- The advice to the Yogya Approach controller to instruct the BTK pilot to go around was not passed;
- The cancelation of the landing clearance was not acknowledged due to BTK pilots were still monitoring Yogya Approach frequency.

2.4 Go around from 600 feet

The Boeing Flight Crew Training Manual (FCTM) chapter B737 NG FCTM 5.77 subject Go-Around and Missed Approach – All Engine Operating, stated that:

During an automatic go-around at 50 feet, approximately 30 feet of altitude is lost. If touch down occurs after a go-around is initiated, the go-around continues. Observe that the auto-throttles apply go-around thrust or manually apply go-around thrust as airplane rotates to go-around attitude.

Note: An automatic go-around cannot be initiated after touch down.

The procedure indicated that a go-around can be performed as long as the aircraft has not touched down.

The Instrument Landing System (ILS) Approach Procedure runway 09 of Adisutjipto Airport stated that Decision Altitude (DA) was 640 feet. This means that whenever an aircraft performs ILS approach and the pilot could not see the runway at 640 feet, a go around must be initiated. This indicated that a go around initiated at 600 feet can be performed safely.

Refer to ICAO Document 8168, the pilot reaction time respecting to the correct attitude and height is approximately 3 seconds. This statements can be used as reference as human reaction time to make a decision.

In fact, when the BTK aircraft was at approximately 600 feet, the Adi Tower controller advised the Yogya Approach controller to instruct BTK pilot to go around. The advice did not pass to BTK pilot as they perceive when the aircraft was on short final, it might jeopardize the safety of the flight.


2.5 The stopping distance of the landing aircraft

Referring to Boeing FCOM PI.22.3, the normal configurations landing distance are shown in the red box.

Calculation for landing with flaps 40 configuration, maximum manual braking, estimated landing weight of 67,369 kg and assuming a tail wind 10 knots, the landing distance are as follows:

- In case of medium braking action, the landing distance will be 6,614 feet or 2,016 meters.
- In case of good braking action, the landing distance will be 4,813 feet or 1,467 meters.

737-900ERW/CFM56-7B26
FAA
Category H/P Brakes

 **737 Flight Crew Operations Manual**

Performance Inflight
Advisory Information

ADVISORY INFORMATION

Normal Configuration Landing Distances
Flaps 40

BRAKING CONFIGURATION	LANDING DISTANCE AND ADJUSTMENTS (FT)											
	REF DIST	WT ADJ	ALT ADJ	WIND ADJ PER 10 KTS		SLOPE ADJ PER 1%		TEMP ADJ PER 10°C		APP SPD ADJ	REVERSE THRUST ADJ	
	70000 KG LANDING WEIGHT	5000 KG ABOVE/BELOW 70000 KG	PER 1000 FT STD/HIGH*	HEAD WIND	TAIL WIND	DOWN HILL	UP HILL	ABV ISA	BLW ISA	PER 5 KTS ABOVE VREF40	ONE REV	NO REV
Dry Runway												
MAX MANUAL	3020	210/-160	70/100	-110	390	40	-30	70	-70	110	50	100
MAX AUTO	3740	220/-180	90/130	-140	470	0	0	100	-100	180	0	10
AUTOBRAKE 3	5240	350/-300	160/210	-230	770	0	-10	170	-170	290	0	0
AUTOBRAKE 2	6700	480/-420	220/300	-320	1080	60	-110	230	-230	310	90	90
AUTOBRAKE 1	7470	550/-490	250/350	-380	1280	180	-220	260	-260	290	450	670
Good Reported Braking Action												
MAX MANUAL	4120	250/-220	120/160	-190	650	100	-90	120	-120	160	180	390
MAX AUTO	4410	270/-240	130/170	-190	680	100	-80	120	-120	190	200	430
AUTOBRAKE 3	5260	350/-300	160/220	-230	790	30	-20	170	-170	300	10	40
AUTOBRAKE 2	6700	480/-420	220/300	-320	1080	60	-110	230	-230	310	90	90
AUTOBRAKE 1	7470	550/-490	250/350	-380	1280	180	-220	260	-260	290	450	670
Medium Reported Braking Action												
MAX MANUAL	5660	390/-340	180/250	-300	1080	270	-210	180	-180	210	500	1160
MAX AUTO	5770	400/-350	190/260	-300	1090	250	-200	180	-180	240	500	1170
AUTOBRAKE 3	5940	420/-360	190/270	-310	1110	220	-150	190	-200	290	410	1100
AUTOBRAKE 2	6900	490/-430	220/310	-350	1230	190	-180	230	-240	310	230	550
AUTOBRAKE 1	7520	550/-490	250/350	-380	1340	260	-240	260	-260	290	500	840
Poor Reported Braking Action												
MAX MANUAL	7420	550/-480	260/370	-450	1720	660	-430	240	-260	250	1080	2750
MAX AUTO	7440	550/-480	270/380	-450	1720	670	-430	240	-260	260	1090	2760
AUTOBRAKE 3	7500	560/-490	270/380	-460	1730	640	-420	250	-260	270	1100	2780
AUTOBRAKE 2	7860	590/-510	280/390	-470	1770	610	-400	270	-280	300	890	2430
AUTOBRAKE 1	8190	600/-540	290/410	-490	1810	630	-430	280	-290	280	1010	2440

Reference distance is for sea level, standard day, no wind or slope, VREF40 approach speed and two engine detent reverse thrust.
Max manual braking data valid for auto speedbrakes. Autobrake data valid for both auto and manual speedbrakes.
For max manual braking and manual speedbrakes, increase reference landing distance by 180 ft.
For autobrake and manual speedbrakes, increase reference landing distance by 160 ft.
Actual (unfactored) distances are shown.
Includes distance from 50 ft above threshold (1000 ft of air distance).
*For landing distance at or below 8000 ft pressure altitude, apply the STD adjustment. For altitudes higher than 8000 ft, first apply the STD adjustment to derive a new reference landing distance for 8000 ft then apply the HIGH adjustment to this new reference distance.

Figure 6: The calculation of landing distance (in feet) refer to B737 NG FCOM PI.22.3

The BTK pilot planned to land with auto-brake selection at position 3. However, during touch down they saw that there was an aircraft on the runway, and then the pilot immediately applied a maximum manual braking and a full thrust reverse until the aircraft stop. The BTK pilot estimated that the aircraft had stopped approximately 100 meters from the AWQ position. It means that the landing distance was approximately 1650 meters.

Refer to the calculation the required landing distance for medium braking action was 6,614 feet or 2,016 meters and for good braking action was 4,813 feet or 1,467 meters. The action of BTK pilot in applying the maximum manual braking had avoided a collision between BTK and AWQ aircrafts.

3 CONCLUSIONS

3.1 Findings

The Komite Nasional Keselamatan Transportasi (KNKT) investigation revealed several findings as follows:

1. Prior to the occurrence the weather at Adisutjipto Airport was raining and the airport operation was closed due to the weather below minima. The airport operation was re-opened at 00:35 UTC after the weather condition improved.
2. The AWQ pilot was instructed by the Adi Tower controller to taxi to holding point runway 27 via N2 taxiway.
3. The interview noted that the AWQ thought that the holding point runway 27 was located at N3 taxiway, and the best way to reach the holding point runway 27 without entering the runway was via N3 taxiway. However the pilots thought did not clearly clarified to the Adi Tower controller.
4. The AWQ pilot was the only pilot communicated with Adi Tower controller during the taxi out. This condition caused the AWQ pilot assumed that there was no aircraft on approach.
5. While entering the runway, the PIC of AWQ saw an aircraft on final runway 09. The pilot immediately stopped the aircraft, and simultaneously Adi Tower controller instructed AWQ pilot to hold position.
6. The PIC of AWQ intended to move the aircraft backward by activating the reverse thrust.
7. The FDR data revealed that the distance travelled on taxiway N2 was 116 meters, the aircraft was 16 meters inside the runway.
8. The Yogya Approach controller informed the BTK pilot that the runway was clear and issued the landing clearance if the runway insight.
9. The BTK pilot reported that the runway insight when the aircraft position was on 3.5 miles to touch down. The Yogya Approach controller re-issued landing clearance and advised the BTK pilot to contact tower after landing.
10. After observed that the AWQ aircraft had entered the runway, the Adi Tower controller advised the Yogya Approach controller to instruct the BTK pilot to go-around. The Yogya Approach controller perceived that a go around when the aircraft was on short final might jeopardize the safety of the flight.
11. Recognizing that the BTK aircraft continued to approach, the Adi Tower controller instructed the BTK pilot to make go around. The BTK pilot did not reply the instruction and continue to land. It was most likely that BTK pilots were still monitoring the Yogya Approach frequency as the last instruction from Yogya Approach controller was to contact tower after landing.

12. Refer to the calculation the required landing distance for medium braking action was 6,614 feet or 2,016 meters and for good braking action was 4,813 feet or 1,467 meters. The landing distance of the BTK aircraft was approximately 1650 meters. The pilot action had avoided a collision between aircrafts.
13. All communication between the pilots and controllers were in the good condition as recorded in the ATC ground base recorder with some background conversations not pertinent to the flight.
14. There was no transfer of control and communication from Yogya Approach controller to Adi Tower controller until the aircraft landed. This was contrary to the AirNav SOP which stated that the transfer of control for arriving aircraft shall be performed at 2500 feet.
15. The taxiway N3 has been used on trial condition since 27 September 2012 as stated on NOTAM and has not been included in the AIP Indonesia amendment 34 and the JEPPESEN airport information.

3.2 Contributing Factors³

- Misinterpretation between pilots and controller related to the position of holding point runway 27 and the taxi clearance had never been clearly clarified.
- There was no transfer of control and ineffective communication between Yogya Approach controller to Adi Tower controller resulting to the initiative Adi Tower controller to instruct the BTK pilot to go around did not acknowledge by BTK pilots.

³ “Contributing factors” is an event or condition that, if it occurred in the future, would increase the likelihood of an occurrence and/ or severity of the adverse consequences associated with an occurrence.

4 SAFETY ACTION

Prior to issuing this draft final investigation report, the Komite Nasional Keselamatan Transportasi (KNKT) has been informed of safety actions resulting from this occurrence.

4.1 PT Batik Air

Following of the runway incursion on 20 November 2013 the PT Batik Air Safety, Security and Quality Directorate issued safety notice 004/SSQ/SN/XI/2013 dated 26/11/2013, with subject; Traffic Awareness and Incident Reporting. Detail of the safety action included in the appendix of this report.

The KNKT considers that the safety actions which have been issued by the operator were relevant to improve of the particular condition.

4.2 Indonesia Air Asia

As the follow up actions to this runway incursion incident has taken some actions and precautions by issuing safety awareness and notifications to all pilots, flight attendants, and dispatchers as the reminders to follow SOP and regulations.

The Indonesia Air Asia management developed special SOP on the prevention of runway incursion and reviewed the training module on the standard Radiotelephony refers to ICAO Doc. 4444 Air Traffic Management, ICAO Doc. 9432 Manual of Radiotelephony.

The KNKT considers that the safety actions which have been issued by the operator were relevant to improve of the particular condition.

5 SAFETY RECOMMENDATIONS

Based on the examination of the factual data and the findings, that contributed to the runway incursion occurrence on 20 November 2013 at runway 27 Adisutjipto Airport, Yogyakarta.

The Safety issues collected on this final report are as follow;

- Transfer of control and communication
- Taxi Clearance
- Controller coordination
- Go around from 600 feet
- The stopping distance of the landing aircraft
- Aeronautical Information Publication

During the course of investigation, the KNKT has been informed several safety actions from parties involved in this serious incident. KNKT considered that the safety actions taken by Batik Air and Indonesia Air Asia have been sufficient to improve the condition in order to prevent similar occurrence.

Therefore the Komite Nasional Keselamatan Transportasi (KNKT) issued several safety recommendations addressed to:

5.1 AirNav Indonesia of Adisutjipto Airport

Series of ineffective communications occurred between Yogya Approach controller and Adi Tower controller and also between controllers and pilots. Furthermore, the examination on the AirNav Standard Operating Procedure (SOP) chapter 12.1.11, subject Transfer of Control and chapter 12.1.12 subject Transfer of Communication were the subject that related to the serious incident.

It is require considering the possibility of these particular issues extends to the controllers other than Adisutjipto Airport.

Therefore the KNKT recommends;

- a) To emphasis all Adisutjipto controllers to be consistent in the implementation of the SOP, particularly on transfer of control and transfer of communication.
- b) To ensure that the controllers well understands and implements the radiotelephony standard phraseology.
- c) To enrich the knowledge of the controllers concerning to the aircraft performance and operation. This refer to the finding that the controller perceived that an aircraft go around from short final might jeopardize the safety of the flight, while the aircraft procedure indicated that a go-around can be performed as long as the aircraft has not touched down.
- d) To ensure that the controller environment is free from any noise and non-pertinent conversation.

5.2 Directorate General Civil of Aviation (DGCA)




The taxiway N3 has been used on trial condition since 27 September 2012 as stated on the NOTAM and has not been included in the AIP Indonesia and the JEPPESEN airport information

The KNKT recommends:

- a. To amendment of the AIP for Adisutjipto Airport to include the taxiway NP and N3 in the airport layout.
- b. To review the existing AIP publication system to ensure the amendment of the AIP to the current condition in timely manner.
- c. To review the controllers training program in order to enrich the knowledge of the controllers concerning to the aircraft performance and operation. This refer to the finding that the controller perceived that an aircraft go around from short final might jeopardize the safety of the flight while the aircraft procedure indicated that a go-around can be performed as long as the aircraft has not touched down.

6 APPENDICES

6.1 Safety Notice Action from PT Batik Air

 <i>Safety, Security, and Quality</i>	SAFETY, SECURITY AND QUALITY DIRECTORATE	004/SSQ/SN/XI/2013
	SAFETY NOTICE	26 11 2013 Page 1 / 1
Date of effectiveness: November 26, 2013		 <p><i>Be alert be aware be safe be secure</i></p> <p>send your hazard report to ssq.report@batikair.com</p>
Distribution list: DO.		
Applicability: All Pilots		
Prepared by: Wisnu Wijayanto		
Approved by: DS		
Subject: <i>Traffic Awareness and Incident Reporting</i>		

Dear Operation Directorate,

With reference to Batik Air internal investigation on Serious Incident Near Miss / Runway Incursion PK-LBH BTK6360 in Adisutjipto Airport, November 20th, 2013, SSQ would like to bring the attention to all flight crews to the following safety recommendation to prevent similar incident from happening in the future:

1. Flight crews are to comply with any instruction given by ATC.
2. Flight crews are required to readback any ATC instruction and take note of complex ATC clearance.
3. Flight crews are to confirm if unclear instruction or non-standard phraseology is used by ATC or other traffic.
4. Maintain traffic awareness especially in low visibility operation.

In order to promote a better safety culture and improving data collection process, SSQ encourage to all flight crews to give an immediate initial report of any safety related occurrence to SSQ via email to ssq.report@batikair.com and phone/SMS to 0811 844 0754 or Chief Pilot. A complete report can be given as soon as the condition and time permit.

Thank you for your kind attention.

6.2 Safety Notice Action from AirNav Indonesia



AirNav Indonesia

Perum LPPNPI

KANTOR PUSAT :
Cedung AirNav Indonesia
Jl. Ir. H. Juanda Tanggerang 1511
Telepon : 021 - 55915000
Fax : 021 - 55915100
www.airnavindonesia.co.id

TANGGAPAN ATAS DRAFT FINAL REPORT KNKT Nomor : KNKT.13.11.29.04 (PK-AXG & PK-LBH)

Mengacu pada *Draft Report Runway Incursion Investigation Report* Nomor: KNKT.13.11.29.04 dengan hormat disampaikan bahwa tanggapan yang kami sampaikan adalah sebagaimana yang disampaikan pada Bab 3 CONCLUSION (*halaman 18*) sebagai berikut :

“3.1 Findings

Point 15. There was no transfer of control and communication from Yogya Approach controller to Adi Tower controller until the aircraft landed. This was contrary to the AirNav SOP which stated that the transfer of control for arriving aircraft shall be performed at 2,500 feet”.

Tanggapan :

Disebutkan bahwa pada Standard Operating Procedure (SOP) Air Traffic Services Adi Sutjipto International Airport – Yogyakarta, Point 12.1.11 Transfer of Control :

“d. Transfer of control point from APP to Tower is at the time the aircraft reaching 2500 feet except for landing arriving IFR flight”.

Berdasarkan weather report dari pihak Meteorology, dilaporkan bahwa saat itu kondisi cuaca adalah hujan (*FBI-RA*) dan visibility 1000 meter – 1800 meter, sehingga controller Adisutjipto Tower tidak bisa melihat pesawat yang di posisi final approach. Berdasarkan aturan yang berlaku, kondisi IMC (Instrument Meteorological Conditions) *landing clearance* bisa diberikan oleh unit Approach Control (APP) dan transfer of control and communication dari APP ke TWR bisa dilakukan pada saat pesawat sudah mendarat di landasan (*has landed*). Aturan tersebut terdapat pada ICAO Doc.4444 Air Traffic Management dan ATS Operational Agreement antara Unit Jogja APP dan Adisutjipto Tower.

Dari hal tersebut di atas, dapat disimpulkan bahwa pada saat itu Jogja APP belum melakukan transfer of control dan communication ke Adi Tower. Berdasarkan *voice recording*, controller Jogja APP memberikan instruksi *landing clearance* kepada BTK6360 dan *contact* Adi Tower after landing.

Referensi :

1. ICAO Doc.4444 Air Traffic Management (*Fifteenth Edition – 2007*)

“4.3.2.1.1 Arriving aircraft. Control of an arriving aircraft shall be transferred from the unit providing approach control service to the unit providing aerodrome control service when the aircraft:

- a) is in the vicinity of the aerodrome, and*
 - 1) it is considered that approach and landing will be completed in visual reference to the ground, or*
 - 2) has reached uninterrupted visual meteorological conditions, or*

*b) is at a prescribed point or level, or
c) **has landed**,
as specified in letters of agreement or ATS unit instructions”.*

2. ATS Operational Coordination between Unit Jogja APP – Adisutjipto TWR

“Arriving Aircraft shall be transferred to Adisutjipto Tower in the following conditions :

- a. In IMC : **Aircraft has landed***
- b. In VMC : 1. Aircraft in bound heading established localizer/final course or runway insight.
2. Aircraft approaching KISMO, PATUK, JOGLI dan CANDI point for aircraft training flight”.*

6.3 Safety Notice Action from Indonesia Air Asia



Jakarta, 20 Maret 2014
No. 027/DSS/IAA/III/2014

Kepada Yth.
Bapak Tatang Kurniadi *TK*
Ketua KNKT
Komite Nasional Keselamatan Transportasi
Kementerian Perhubungan RI
Jakarta

Perihal : Tanggapan atas *Draft Aircraft Rnway Incursion Investigation Report* Airbus A320-200 registrasi PK-AXG dan Boeing B737-900ER registrasi PK-LBH

Dengan hormat.

Pertama-tama kami sampaikan salam sejahtera kepada Bapak, semoga dalam keadaan sehat dalam menjalankan aktivitas.

Sehubungan insiden yang terjadi pada tanggal 20 November 2013 antara penerbangan komersial antara Indonesia AirAsia QZ8441 dengan Batik Air ID6360 yang tergolong sebagai Runway Incursion; yang mana kami telah menerima dengan baik Draft Report tersebut diatas dengan beberapa tanggapan, yaitu:

1. Pada halaman 14, poin 2.2 Taxi Clearance, di alinea ketiga:
"The pilot reconfirmed that the taxiway was N2, the interview moted that the pilots perceive of holding point runway 27 was located at N3 taxiway, close to the threshold runway 27. To reach that position without entering the runway was via N3 taxiway. However this circumstance was not clarified to the Adi Tower controller"

Untuk kalimat this circumstance was not clarified to the Adi Tower controller; bahwa sesuai rekaman pembicaraan ATC dan Pilot, **AWQ8441 telah menanyakan (reconfirmation) kepada Adi Tower** setelah pemberian taxi clearance dengan readback: "Runway 27. Confirm via N2?". Dan oleh Adi Tower diberikan hearback: "Affirm November Two followed by ATC clearance message..."

Karena pada awal permintaan izin taxi kepada Adi Tower, AWQ8441 telah request runway 27, dan Adi Tower telah memberikan clearance "AWQ8441 taxi runway 27 via November Two. ATC clearance available".

2. Pada halaman 19, poin 3.3 Contributing Factors, di alinea pertama:
"There were ineffective communications between controllers as well as between controllers and pilots".

Untuk hal ini kami berpendapat bahwa bukan hanya ineffective communications saja, namun menjadi "There were ineffective and **Non-Standard Radiotelephony / Phraseology** between controllers as well as controllers and pilots".

3. Pada halaman 20, poin 4 SAFETY ACTION.

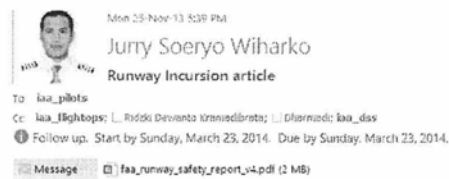
Belum disertakannya dalam Draft tersebut Safety action yang telah dilakukan oleh semua pihak terkait, yaitu PT. Indonesia Air Asia (sebagaimana telah kami sampaikan pada hearing di KNKT pada 11 Desember 2013), serta safety action dari ATC controllers (AirNav dan TNI-AU).

Khusus untuk PT Indonesia Air Asia, seperti yang telah kami sampaikan pada sesi investigasi yang dilakukan KNKT bulan Desember 2013, sebagaimana terlampir dalam 8 (delapan) lampiran yang tidak terpisahkan dalam surat ini; yaitu:

- a. Lampiran 1. Sebagaimana Company e-mail adalah media resmi seluruh pegawai PT Indonesia AirAsia, maka pada hari yang sama setelah Insiden kami segera menerbitkan informasi kepada seluruh IAA Pilot dan Flight Operations (dispatcher) tentang adanya insiden runway incursion di JOG; untuk menghimbau tidak mengeluarkan statement kepada pihak manapun guna menghindari kesalahpahaman, menunggu proses investigasi yang akan dilakukan. (e-mail berjudul "Today QZ 8441" tanggal 20 November 2013).
- b. Lampiran 2. Berupa himbauan dari Flight Operations sebagai pengingat kepada seluruh Crew IAA (Pilot dan Flight Attendant) akan pentingnya mematuhi SOP yang ada dan meningkatkan CRM. (e-mail berjudul "Increasing number of violations and incidents. Wet season" tanggal 20 November 2013).
- c. Lampiran 3. Berupa pemberitahuan Segera kepada pihak regulator: DKUPPU beserta data pendukung, sebagai initial direct report. (email berjudul "FW: QZ 8441JOG-DPS RTA (incident Report) tanggal 21 November 2013)
- d. Lampiran 4. Berupa Safety Investigation Report dari Safety department kepada Flight Operations dan Management sebagai initial formal report atas insiden. Safety Investigation Report nomor DSS/SIR-004/XI/2013 tanggal 21 Nov 2013.
- e. Lampiran 5. Berupa pemberitahuan kepada seluruh IAA Pilot tentang Runway Incursion dilengkapi artikel dari FAA tentang "FAA Safety Report – Runway Incursion 1997 – 2000".
- f. Lampiran 6 tentang ICAO doc.9870 – Manual on the Prevention of Runway Incursion.
Lampiran 7 tentang ICAO doc.4444 – Air Traffic Management.
Lampiran 8 tentang ICAO doc.9432 – Manual of Radiotelephony.
Ketiga ICAO Documents ini dipakai sebagai acuan/referensi oleh Team Ad-Hock yang terdiri dari Safety, Operations, Quality and Legal Departments dalam pembuatan company SOP – Standard Operating Procedure tentang pencegahan runway incursion.
- g. Upaya PT Indonesia Air Asia menghubungi Divisi Psikologi TNI-AU, Mayor Penerbang Murti di Halim, Jakarta Timur, sebagai upaya untuk memulihkan kondisi trauma/psikologis Pilot yang mengalami insiden.

Dari ketujuh poin diatas dapat dirangkum bahwa PT Indonesia Air Asia telah melakukan SAFETY ACTIONS terhadap insiden yang terjadi sebagai upaya untuk mencegah kejadian serupa terulang kembali di masa mendatang. Sehingga dapat dicantumkan dalam poin 4 SAFETY ACTION, sebagai poin 4.2 PT Indonesia Air Asia: **"As the follow-up actions to the runway incursion incidents PT Indonesia AirAsia has taken some actions and precautions by issuing safety awareness and notifications to all Pilots, Flight Attendants and Dispatchers as the reminders to follow SOP and Regulations. IAA management is developing special SOP on the prevention of runway incursion. IAA Flight Operations is reviewing the Training module on the Standard Radiotelephony"**.

4. Pada halaman 23, poin 6 APPENDICES
 Dapat dimasukkan sebagai poin 6.2 Safety Notice Action from PT Indonesia Air Asia:



Dearest Colleagues,

Few days ago we had a runway incursion in Jogjakarta and this was the third times occurring in this year.

The contributing factors for all runway incursion incidents are:

1. NGN standard radio telephony by ATC
2. NGN standard radio telephony reply from pilots
3. Rushing condition
4. CRM breakdowns in the cockpit
5. Communications breakdown between Approach and Tower
6. Cockpit crew coordination breakdown and many more.

Those are hazards we need to mitigate.

As we all aware that many times we received a non standard radio telephony by ATC. If we are in doubt, we have to re-ask the instruction. And we need to do it in a standard radio telephony.

For example:

*ATC: AWQ 009 you are cleared holding point runway 11 via S2 (non standard)

*C/M2: Confirm cleared for holding point S2 runway 11? Or (Standard)

*C/M2: Confirm cleared for entering runway 11 via S2? (Standard)

We are in the tight ground time but once again, do not trade Safety with any other else.

This is not easy to do it but we have to exercise in daily basis.

When requesting any ATC clearance, both pilots must be seated at his/her station and understand the instruction clearly. If in doubt, re-ask. Do not jump one to another. Assess the readiness of our flying partner for requesting clearance.

As a human being, we are working in sequential order. We are not able to do two tasks at the same time.

Many of the incident / accident because crew tried to multitasking without proper priority order.

The attachment above is from FAA in regards of runway incursion.

Enjoy the reading and it enlightens our aviation knowledge.

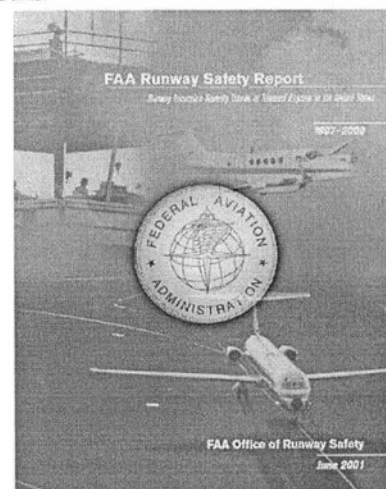
I do hope that this will be the last of the incident in IAA.

Let's keep up the good work and fly safely.

Have a pleasant evening.

Sincerely,

Jurry Soeryo Wiharko - Flight SAFETY Manager
 Office: Management Building 2nd floor Terminal 1A Departure
 Soekarno Hatta International Airport Jakarta 19110, Indonesia
 Office: +62 21 29270878
 Mobile: +62 81 7158037
 Home: +62 361 8479728



Demikian beberapa tanggapan yang dapat kami sampaikan, yang merupakan data dan fakta yang telah kami lakukan, sebagai cerminan dari semangat Just Culture dan penerapan dari ICAO Annex-13. Diharapkan dapat menjadi bahan pembelajaran untuk mencegah kejadian tersebut terulang di kemudian hari.

Demikian surat ini kami sampaikan, atas perhatiannya diucapkan terima kasih.

6.4 Safety Notice Action from Adisucipto Airport, PT. Angkasa Pura I



BANDAR UDARA INTERNASIONAL
Adisutjipto YOGYAKARTA

PT. Angkasa Pura I (Persero)
Adisutjipto International Airport:
Jl. Solo Km. 9 Yogyakarta 55282
Telp. (0274) 489466, 484261, Fax. (0274) 488155
web:jogja-airport.com
Kantor Pusat Jakarta:
Kota Baru Bandar Kemayoran Blok B. 12 Kav. 2
Jakarta 10610, Indonesia
tel: 021 654 1961 fax: 021 654 1514 web: angkasapura1.co.id

Nomor : AP.I. 487 /OP.02.01/2014/III/GM.JOG-B
Lampiran : 1 Berkas
Perihal : Draft Aircraft Runway Incursion Investigation ✓

Kepada Yth. :

Ketua Komite Nasional Keselamatan Transportasi
di
Tempat

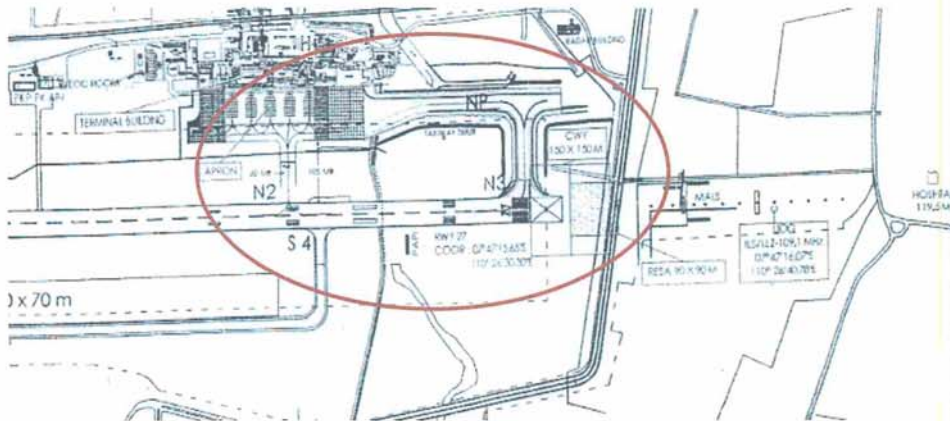
for 13/3/14

Dengan hormat,

1. Menunjuk Surat Komite Nasional Keselamatan Transportasi Nomor KTU.RH/2/5 KNKT 2014 tanggal 20 Februari 2014 perihal Draft Aircraft Runway Incursion Investigation Report Airbus A320 registrasi PK-AXG dan Boeing B737-900ER registrasi PK-LBH
2. Mengalir butir 1 (satu) diatas terlampir disampaikan tanggapan dari PT. Angkasa Pura I (Persero) Cabang Bandara Adisutjipto Yogyakarta.
3. Demikian atas perhatiannya diucapkan terima kasih.

**DATA TAXIWAY N3 DAN NORTH PARALLEL (NP)
 DI BANDARA ADISUTJIPTO YOGYAKARTA**

Berdasarkan Draft Aircraft Runway Incursion Investigation Report Nomor KNKT.13.11.29.04 point " *Observation on the Adisutjipto International Airport Information* " disampaikan bahwa data yang diterima dari Local Airport sudah termasuk gambar taxiway N2, NP dan N3 sebagai berikut :



Namun data yang diperoleh oleh Investigator KNKT berdasarkan gambar dari JEPESEN tanggal 20 Juli 2012 adalah sebagai berikut :

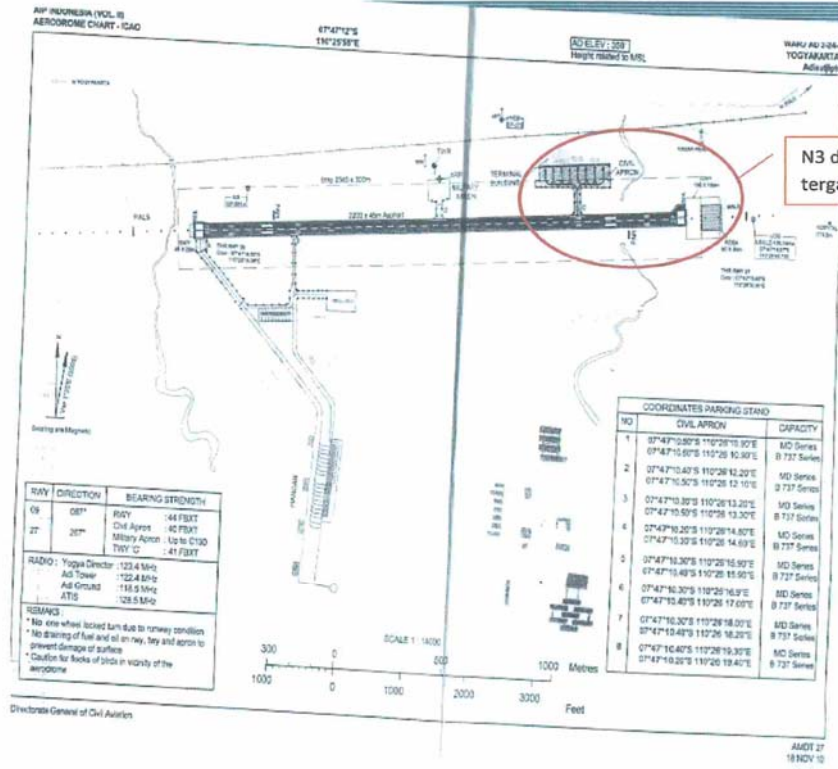


Pada data tersebut Taxiway N3 dan NP belum ada hal ini didasari oleh AIP issued 7 September 2009 sampai dengan saat kejadian data tersebut belum berubah.

Menindak lanjuti hal tersebut setelah dilakukan pengecekan terhadap AIP Bandara Adisutjipto ditemukan data bahwa sebenarnya publikasi terkait N3 dan NP sudah dilakukan sesuai dengan AIP Amdt. 34 tanggal 13 Desember 2012 namun lay out pada dokumen AIP yang dimiliki Bandara Adisutjipto masih lay out yang lama sesuai dengan Amdt 27 tanggal 18 Nopember 2010 sebagaimana berikut :

AIP INDONESIA (VOL. II) WARJ AD 2 - 3

TAXIWAY SOUTH 3 (S3) (MILITARY)		= Asphalt
Surface		= NIL
Strength		= 46 x 15 m
Dimension		
TAXIWAY SOUTH 4 (S4) (MILITARY)		= Asphalt
Surface		= NIL
Strength		= 145 x 15 m
Dimension		
TAXIWAY SOUTH PARALEL (SP1) (MILITARY)		= Asphalt
Surface		= NIL
Strength		= 1680 x 15 m
Dimension		
TAXIWAY SOUTH PARALEL (SP2) (MILITARY)		= Asphalt
Surface		= NIL
Strength		= 270 x 22 m
Dimension		
TAXIWAY N1 (MILITARY)		= Concrete
Surface		= NIL
Strength		= 67 x 27 m
Dimension		
TAXIWAY N2		= Asphalt
Surface		= PCN 41 FBXT
Strength		= 105 x 30 m
Dimension		
TAXIWAY N3 :		= Asphalt
Surface		= PCN 59 FCXT
Strength		= 120 x 23 m
Dimension		
TAXIWAY NORTH PARALEL (NP) :		= Asphalt
Surface		= PCN 59 FCXT
Strength		= 360 x 23 m
Dimension		
ACL Location and Elevation		NIL
VOR / INS Checkpoints		NIL
Remarks :		
FILLET 1 (MILITARY) :		= Grass
Surface		= NIL
Strength		= 67 x 20 m
Dimension		
FILLET 2 (MILITARY) :		= Grass
Surface		= NIL
Strength		= 67 x 30 m
Dimension		



N3 dan NP belum tergambar

Perbedaan data tersebut yakni antara Amdt. 34 tanggal 13 Desember 2012 dan Amdt 27 tanggal 18 Nopember 2010 semestinya tidak terjadi di karenakan amandemen di AIP apabila terjadi perubahan data terkait data aerodrome semestinya juga akan merubah lay out aerodrome tersebut. Pihak yang dapat melakukan amandemen AIP adalah Kementerian Perhubungan dalam hal ini Direktorat Jenderal Perhubungan Udara, dari pihak bandara sudah menyampaikan data perubahan aerodrome tersebut berdasarkan surat Pts. General Manager Bandara Adisutjipto tanggal 27 Juni 2012, terlampir.



BANDAR UDARA INTERNASIONAL
Adisutjipto YOGYAKARTA

PT. Angkasa Pura I (Persero)
Adisutjipto International Airport:
Jl. Solo Km. 9 Yogyakarta 55282
Telp. (0274) 489466, 484261, Fax. (0274) 488155
web:jogja-airport.com
Kantor Pusat Jakarta:
Kota Baru Bandar Kemayoran Blok B. 12 Kav. 2
Jakarta 10610, Indonesia
tel: 021 654 1961 fax: 021 654 1514 web: angkasapura1.co.id

Nomor : AP.I.1161/OP01.03/VI/2012/GMI-B.
Lampiran : 1 (satu) berkas.
Perihal : Publikasi dan perubahan data AIP.

Kepada Yth.:

**Kepala Sub Direktorat Informasi Aeronautika.
Direktorat Navigasi Penerbangan
Direktorat Jenderal Perhubungan Udara
Gedung Karya Lantai 7
Jl. Merdeka Barat no. 8
Jakarta Pusat.**

1. Bersama ini dengan hormat disampaikan perubahan dan penambahan fasilitas penunjang keselamatan operasi penerbangan di Bandar Udara Adisutjipto Yogyakarta sebagai berikut :
 - a. 1 (satu) kendaraan pemadam kebakaran (Combine Agent) Type I :
11.300 L water, 1.600 L foam, 225 kg DCP.
 - b. Military South Parallel Taxiway.
 - c. Civil North Parallel Taxiway dan Exit Taxiway.
2. Sehubungan dengan hal tersebut, dimohon perubahan dan penambahan tersebut dapat dipublikasikan dalam NOTAM dan AIP seperti data dukung terlampir.
3. Demikian disampaikan, atas perhatiannya diucapkan terima kasih.

WARJ AD 2.5 PASSENGER FACILITIES

Hotels.....	In Town and Near Airport
Restaurant.....	At Airport
Transportation.....	Taxi and Rent Car
Medical Facilities.....	Clinic at Airport, Hospital In Town
Bank and Post Office.....	Money Changer In Airport
Tourist Office.....	Post Office Out Side of Airport
Remarks.....	At Airport
	NIL

WARJ AD 2.6 RESCUE AND FIRE FIGHTING

AD Category For Fire Fighting.....	Category VII
Rescue Equipment.....	1 Unit Type I 11300 L Water, 1600 L Foam, 225 Kg DCP. ←
	1 Unit Type I 9000 L Water and 900 L Foam
	2 Unit Type II @ 4000 L Water and 400 L Foam
	1 Unit Rescue Multi Purpose Car
	2 Unit Ambulance
Capability For Removal Of Disabled Aircraft....	1 Unit Commando Car
Remarks.....	1 Unit Rescue Car
	NIL
	NIL

WARJ AD 2.7 SEASONAL AVAILABILITY CLEARING

Type of Clearing Equipment.....	1 Sweeping Car
Clearance Priority.....	TWY, Apron
Remarks.....	NIL

WARJ AD 2.8 APRONS, TAXIWAYS AND CHECK LOCATION DATA

APRON SURFACE AND STRENGTH

CIVIL APRON :
Surface

= West Part Concrete
Center Part Asphalt Concrete
East Part Concrete
= 40 FBXT
= 36 X 315 m

Strength
Dimensions

MILITARY APRON :

Surface
Strength
Dimension

= Concrete
= Up to C -130
= 75 x 100 m

TAXIWAY WIDTH, SURFACE AND STRENGTH

MILITARY TAXIWAY :

- SOUTH PARALLEL TWY (SP)

Surface
Strength
Dimension

= Asphalt
= NIL
= 1.680 x 16 m ←

- TAXIWAY S1 :

Surface
Strength
Dimension

= Asphalt
= NIL
= 159,5 x 30 m

- TAXIWAY S2 :
 - Surface = Asphalt
 - Strength = NIL
 - Dimension = 146 x 11 m
- TAXIWAY S3 :
 - Surface = Asphalt
 - Strength = NIL
 - Dimension = 46 x 16 m
- TAXIWAY S4 :
 - Surface = Asphalt
 - Strength = NIL
 - Dimension = 146 x 16 m
- TAXIWAY N1 :
 - Surface = Concrete
 - Strength = NIL
 - Dimension = 67 x 27 m

CIVIL TAXIWAY :

- NORTH PARALLEL TWY (NP)
 - Surface = Asphalt
 - Strength = PCN 59 FCXT
 - Dimension = 380 x 23 m
- TAXIWAY N2 :
 - Surface = Asphalt
 - Strength = PCN 41 FBXT
 - Dimension = 105 x 30 m
- TAXIWAY N3 :
 - Surface = Asphalt
 - Strength = PCN 59 FCXT
 - Dimension = 120 x 23 m

ACL Location and Elevation..... NIL
 VOR / INS Checkpoints..... NIL

- Remarks :
- FILLET 1 (MILITARY) :
 - Surface = Grass
 - Strength = NIL
 - Dimension = 5 x 10 m

WARJ AD 2.9 SURFACE MOVEMENT GUIDANCE AND CONTROL SYSTEM AND MARKING

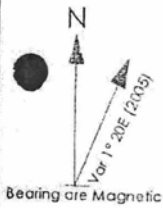
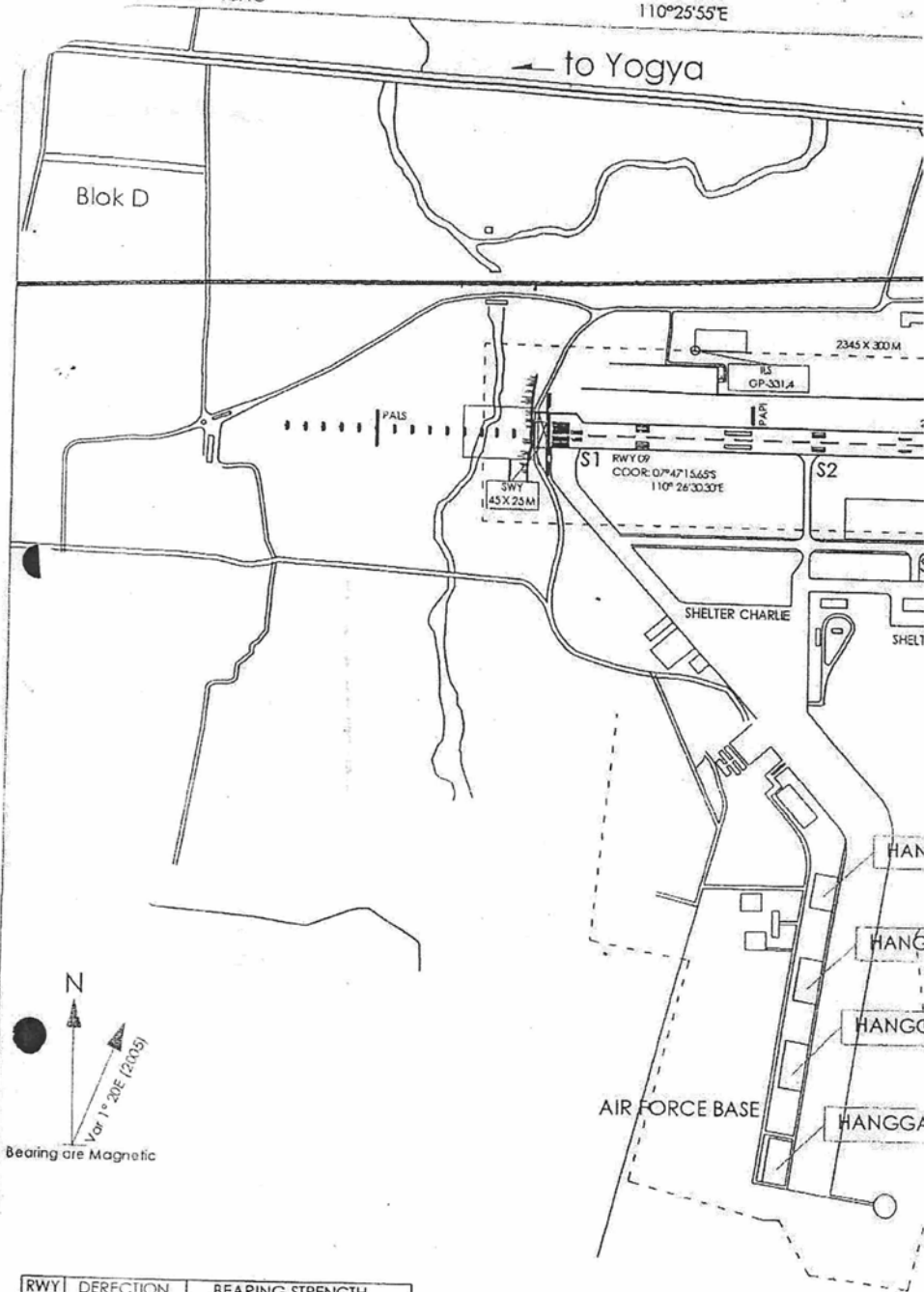
- Use of Aircraft ID Sign, TWY Guide Lines and Visual Docking / Parking Guidance System of Aircraft Stands.....
- TWY Centerline Connected to Aircraft Parking Stand at Airport.
- Nose In Parking System.

OL. II)
CHART - ICAO

07°47'12"S
110°25'55"E

← to Yogya

Blok D



RWY	DERECTION	BEARING STRENGTH
09	087°	RWY : 55 FCXT Civil Apron : 40 FBXT
27	267°	RWY : 55 FCXT Civil Apron : 40 FBXT
RADIO : YOGYAKARTA APP : 123,4 MHz , 120,2 MHz Adi Tower : 122,4 MHz , 118,1 MHz Adi Ground : 118,5 MHz ATIS : 128,5 MHz		
REMARK : • No one wheel locked turn to runway condition • No draining of fuel and oil on rwy, lwy and apron to prevent damage of surface • caution for flocks of birds in vicinity of the aerodrome		



SCALE 1 : 10000

Directorate General of Civil Aviation



KEMENTERIAN PERHUBUNGAN
DIREKTORAT JENDERAL PERHUBUNGAN UDARA

BERITA ACARA VERIFIKASI
PRASARANA BANDAR UDARA
DIREKTORAT BANDAR UDARA

Pada hari ini Kamis Tanggal Enam Belas Bulan Februari Tahun Dua Ribu Dua Belas telah dilaksanakan Verifikasi Prasarana Bandar Udara di Bandar Udara Adisutjipto Yogyakarta Provinsi Daerah Istimewa Yogyakarta oleh Tim Direktorat Jenderal Perhubungan Udara yang didampingi DISHUBKOMINFO Provinsi Daerah Istimewa Yogyakarta berdasarkan Surat Perintah Tugas Direktur Bandar Udara Direktorat Jenderal Perhubungan Udara Nomor : 76/DJBU/SPT/1/2012.

Dari pelaksanaan Verifikasi didapat hasil sebagai berikut:

I. DATA BANDAR UDARA

A. Nama Bandar Udara	: Adisutjipto
B. Nama Kota/Kabupaten	: Yogyakarta
C. Nama Pengelola	: PT. Angkasa Pura I (Persero)
D. Koordinat Referensi Bandar Udara (ARP)	: 07° 47' 12" S ; 110° 25' 55" E
E. Elevasi	: 350 ft MSL
F. Temperatur	: 33 °C
G. Jenis Pelayanan Lalu Lintas Udara	: ADC
H. Jam Operasi	: 23.00 – 14.00 UTC

II. LAMPIRAN

Lampiran 1.	Data Fasilitas Sisi Udara	:	Ada
Lampiran 2.	Gambar Layout	:	Ada
Lampiran 3.	Dokumentasi	:	Ada

III. CATATAN HASIL PEMERIKSAAN

NO	CATATAN	SARAN DAN TINDAK LANJUT	STATUS	KETERANGAN
1	Terdapat permukaan runway shoulder berupa tanah yang lebih tinggi dari permukaan runway.	Agar segera dilakukan pemotongan permukaan runway shoulder yang berupa tanah tersebut dan membentuk slope agar air dapat dialirkan menuju saluran air	M	Masih termasuk dalam masa pemeliharaan.
2	Terdapat rumput yang tumbuh tinggi dan menjalar di pinggir runway.	Segera dilakukan pemotongan rumput.	M	Masih termasuk dalam masa pemeliharaan.

3	Pada pertemuan <i>paradee taxiway</i> dan permukaan tanah terdapat bagian yang belum dilakukan <i>slopping</i> tanah padat.	Agar dibuat <i>tapering</i> tanah padat dengan <i>slope</i> maksimal 2,5 %.	M	Masih termasuk dalam masa pemeliharaan.
4	<i>Taxiway Edge Marking</i> masih ada bagian yang belum dicat.	Agar segera dilakukan pengecatan.	R	Masih termasuk dalam masa pemeliharaan.
5	<i>Marking Turning Area</i> belum dihapus dan <i>Runway Side Stripe Marking</i> pada daerah yang dahulu digunakan sebagai <i>Turning Area</i> belum dicat menyambung.	Agar segera dilaksanakan.	R	

Catatan : M = Mandatory
R = Rekomendasi

IV. KESIMPULAN

1. PCN untuk *Paralel Taxiway Utara* dan *Exit Taxiway* baru adalah PCN = 59 FCXT.
2. Dimensi *Paralel Taxiway Utara* adalah 380 m x 23 m dan dimensi *Exit Taxiway* baru adalah 120 m x 23 m.
3. Catatan Hasil Pemeriksaan agar segera ditindaklanjuti dan melaporkan hasil pelaksanaannya kepada Direktur Jenderal Perhubungan Udara melalui Direktur Bandar Udara.

Demikian Berita Acara Verifikasi ini dibuat untuk dapat dipergunakan sebagaimana mestinya.