

**FINAL REPORT OF GROUND COLLISION
OCCURRENCE (GCOL) KOREAN AIR, AIRBUS, A- 330- 200 (HL- 7538) &
BANGKOK AIRWAYS, ATR 72- 212A (HS- PGA) AT YANGON
INTERNATIONAL AIRPORT ON FEBRUARY, the 12th, 2015**

SYNOPSIS

At 23h55 (Local time) on February, the 12th, 2015, Airbus A- 330- 200 aircraft, registered (HL-7538) operated by Korean Air taxi out along the Yangon International Airport (VYYY) taxiway-A for takeoff from runway 03. On board the aircraft were the Pilot in command (PIC), first officer (FO), 10 cabin crews and 134 passengers. During taxi, the wing tip of the aircraft struck to the empennage of Bangkok Airways ATR 72-212 A (HS- PGA) which was already parked for night stop on Yangon Airport apron A. the left wing tip of the A-330-200 (HL-7538) was damaged and needed minor repair. The empennage of ATR72-212A (HS- PGA) was substantially damaged and needed structural repair. No one was injured during this Occurrence (Serious Incident).

Korean Air, Airline Company

Registered owner and operator	: Korean Air, Airline Company
Aircraft type	: A330-200
Nationality	: Republic of Korea
Registration	: HL-7538
Place of Occurrence	: Taxiway A, Yangon International Airport N 16° 53' 58.5", E. 96° 7' 50.70".
Date& Time	: 12February 2015 at 23h 55 Local time (UTC + 6h 30)
Type of operation	: (KE 472)
Phase of operation	: Taxiing from gate to Runway 03

Bangkok Airways, Public Company Limited

Registered owner and operator	: Bangkok Airways Limited
Aircraft type	: ATR 72-212 A
Nationality	: Thailand
Registration	: HS-PGA
Place of Occurrence	: Apron A, Yangon International Airport N 16° 53' 58.5", E 96° 7' 50.70".
Date & Time	: 12 February 2015 at 23 h 55 Local time (UTC + 6 h 30)
Type of operation	: Parking on Apron- A
Phase of operation	: Parked for night stop

1. FACTUAL INFORMATION

1.1 History of the flight

1.1.1 Pre-flight preparation and taxi out

The Korean Air aircraft (HL-7538) was scheduled to operate a passenger flight to Seoul, Incheon Korean. The aircraft was parked at Gate No.4 of Yangon International Airport. At the time of departure 23h51, the aircraft was pushed back to taxiway -A and taxied to Runway-03 (**Figure 1**). On board the aircraft were the Pilot in command (PIC), first officer (FO), 10 cabin crews and 134 passengers.

Bangkok Airways aircraft (HS-PGA), PG 705/706 flight, was a daily scheduled passenger flight, arriving at 21h30 hours at Yangon International Airport, having an overnight and next morning for leaving Yangon at 06h05 hours.

On that day, Bangkok Airways aircraft (HS-PGA) was parked on Apron-A in nose-in position, the empennage of which was 27.3 meters away from the taxiway centerline. No passengers and crew were onboard. (**Figure 2**)

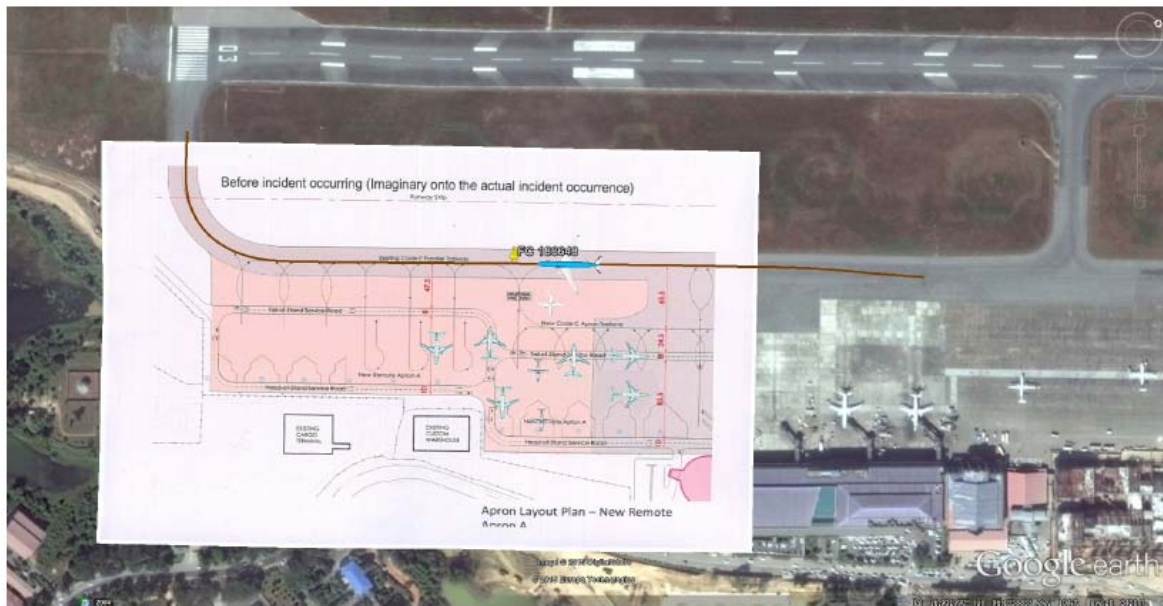


Figure 1.(HL-7538) Ground Taxi Path

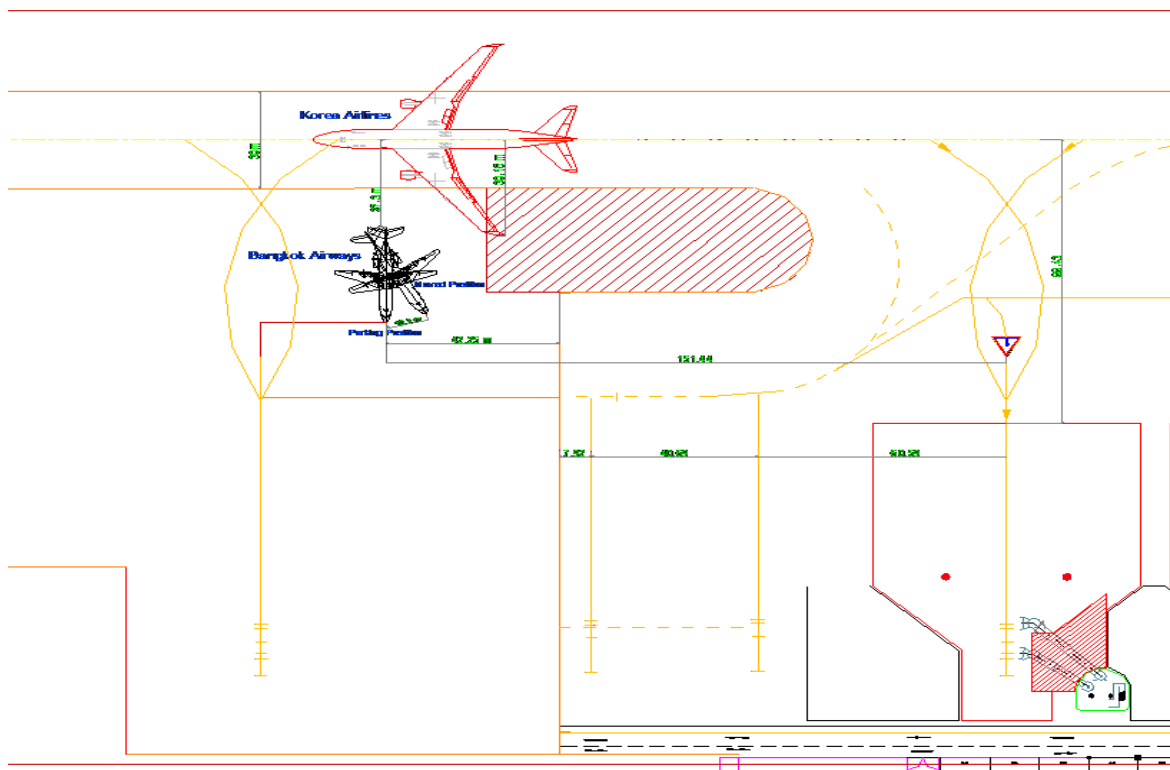


Figure 2 .Aircraft Parking Position

1.1.2 Ground Collision (GCOL)

During taxi, HL-7538 wingtip struck HS-PGA empennage and its nose wheel moved about 15 ft to the left. The Pilot of the HL-7538 did not notice and took off from runway 03 and continued flight to Incheon. Under the reporting of ground persons, ATC contacted to HL-7538 Flight crew, which returned to Yangon Airport and safely land about 40 minutes later.

1.2 Injuries to persons

Injuries	Crew	Passengers	Other	Total
Fatal	0	0	0	0
Serious	0	0	0	0
Minor/ None	0\12	0\134	0	0\146
Total	12	134	0	146

1.3 Damage to aircraft

Korean Air Airbus A- 330-200

The aircraft (HL-7538) Left winglet and Left wing No.7 slat were damaged. It suffered minor damages. (**Figure 3**)

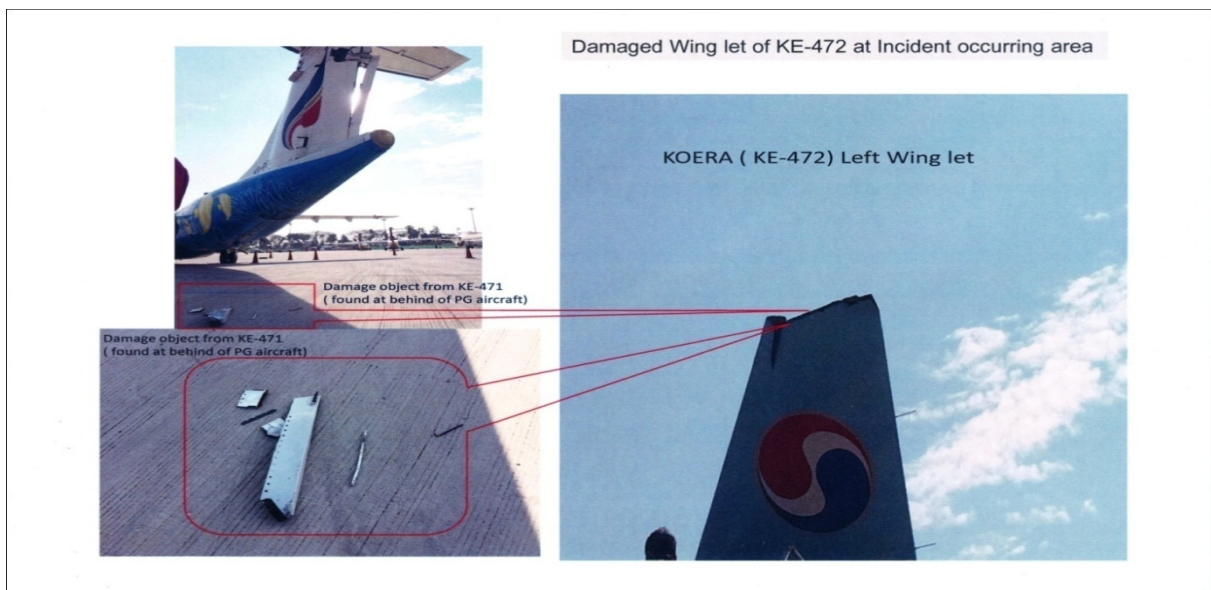


Figure 3: Korean Air (HL- 7538) left winglet and Left wing No.7 slat damage



Bangkok Airways, ATR-72- 212 A

After it has been struck by the A-330, the aircraft (HS- PGA) nosewheel moved 15 ft to the left (**Figure 4**).The Elevator and vertical stabilizer were damaged and need to be structurally repaired. (**Figure 5**)



Figure 4. The moved nosewheel position of Bangkok Air before and after being struck.



Figure 5. The damaged vertical stabilizer of Bangkok Airways Aircraft

1.4 Other Damage

There was no other damage due to the occurrence - (Serious Incident).

1.5 Personnel Information

1.5.1 Korean Air

Pilot in command

Age	: 59
Licence	: Air Transport Pilot Licence
Licence issued date	: 27 Dec 2004
Total hours	: 9,181hrs
On type	: 7860 hrs
Medical expire	: 31 October 2015
Line check date	: 13 Nov 2014
Type rating check date	: 15 Jan 2003
Last 90 days	: 221 hrs
Last 30 days	: 69 hrs
Last 24 hours	: Nil

Co-Pilot

Age : 42
 Licence : Commercial Pilot Licence
 Licence issued date : 04March 1997
 Total hours : 4026:00hrs
 On type : 1860 hrs
 Medical expire : 30 April 2015
 Line Check : 10 Mar 2014
 Type rating check date : 23 Dec 2011
 Last 90 days : 194 hrs
 Last 30 days : 59 hrs
 Last 24 hours : Nil

1.5.2 Bangkok Airways**Pilot in Command**

Not applicable

Co-Pilot

Not applicable

1.5.3 Air Traffic Control

Age : 47(male)
 Licence : Air Traffic Controller Licence, (Valid)
 Experience : 22 years
 Work scheduled : 12-hour shift,1900 hours 12 February 2015 to 1900 hours 13
 February 2015
 Medical : valid

1.5.4 Ground Handling Agent**Marshaller**

Age : 45
 Licence : Apron Driver Licence (No. AP 1616)
 issued by Yangon International Airport
 Licence expiry date : 27 February 2015

Experience : 2 years
 Work schedule : 24-hour (2 shifts)

1.6 Aircraft information

1.6.1 General

Korean Air Aircraft

Manufacture : Air Bus Industry
 Type : A-330-200
 Serial number : MSN 222
 Date of Manufacture : 10 July 1998
 Total flight hours : 67767
 Certificate of Registration : HL- 7538
 C of A issue date : 21 Sept 2012
 AOC issue date : 10 Nov 2001
 Engine type : P&W4168 A
 Periodical inspection, A check : 17 Jan 2015
 Periodical inspection, C check : 07 Jul 2013

Bangkok Airways Aircraft

Manufacture : ATR
 Type : ATR 72-212A
 Serial number : MSN 710
 Date of Manufacture : 20 July 1993
 Total hours : 29524
 Certificate of Registration : HS-PGA
 C of A due : 23 Jul 2015
 Air operator certificate : AOC 05/2553, (17-04-2013)
 Engine type : P & W 127F
 Periodical inspection, A check : 19 Apr 2015

1.7 Meteorological information

The METAR reported at Yangon Airport on the 12th at 18h 20 (UTC) was a wind from 270°, visibility 6000 meters, cloud amount 3 to 4, Temperature 22°C, Dew point 16C, QNH 1011hPa. There was no significant changes.

1.8 Aid to navigation

Yangon International Airport has been equipped with the following facilities:

AIP
MYANMAR

VYYY AD 2 - 7
→ 1 OCT 11

VYYY AD 2.19 RADIO NAVIGATION AND LANDING AIDS

<i>Type of aid, CAT of ILS/MLS</i>	<i>ID</i>	<i>Frequency</i>	<i>Hours of operation</i>	<i>Site of transmitting antenna coordinates</i>	<i>Elevation of DME transmitting antenna</i>	<i>Remarks</i>
1	2	3	4	5	6	7
VOR/DME	BGO	112.6 MHz CH 73X	H24	171906.58N 0963111.55E	Antenna Hgt: 38FT	Coverage: 180 NM Em: A9W
VOR/DME	HGU	112.3 MHz CH 70X	H24	170449.87N 0961502.49E	Antenna Hgt: 49FT DME co-located with VOR	12 NM from THR 21 Coverage: 130 NM Em: A9
NDB	YGN	265 kHz	H24	170442.54N 0961418.18E	-	11.5 NM from THR 21 Coverage: 130 NM Em: NON/A2A
NDB	MDS	397 kHz	H24	165205.78N 0960621.54E	-	1.5 NM from THR 03 Coverage: 50 NM Em: NON/A2A
ILS/LLZ	IYGN	109.9 MHz	H24	165347.14N 0960733.09E	-	Coverage 12 NM RWY21 Em: R3E
ILS/GP/DME	IYGN	333.8 MHz CH 36X	H24	165519.5N 0960830.9E	Antenna Hgt: 50FT DME co-located with GP	Coverage 10 NM RWY21 Em: R3E

1.9 Communication

Communication facilities are as follows:

VYYY AD 2.18 ATS COMMUNICATION FACILITIES

<i>Service designation</i>	<i>Call sign</i>	<i>Frequency</i>	<i>Hours of operation</i>	<i>Remarks</i>
1	2	3	4	5
APP	Mingaladon Approach	119.7 MHz	H24	Nil
TWR	Mingaladon Tower	118.1 MHz	H24	
GMC	Mingaladon Ground	121.9 MHz	H24	

1.10 Aerodrome Information

Yangon International Airport has one main runway 03/21 with a length of -11200-ft at an elevation of -110-ft above mean sea level and is certified for both VFR and IFR flight. The airport has an ATC control tower, controlling class B airspace with radar surveillance.

Apron Management Team has been established since October, the 30th, 2010 at the Yangon International Airport, which is responsible for allocation of aircraft parking stand, control of aircraft and vehicle operating on the apron and monitoring safety of operations with close coordination with ATS unit. Working hours are from 9am to 5pm (local time).

There are eleven aircraft parking stands, five night parking bays on the existing apron and four aircraft parking stands on apron A(New Apron), all together twenty. However, **up to (32)** aircraft had to park on the whole apron, which means that it was congested and not the same as shown in AIP and Jeppsen publication. **Apron A** is a newly constructed area in where some lighting facilities had not been completed yet at the time of occurrence .As a result-the lighting was not able to cover up to the edge of the apron A and dark.

Apron area (existing one) is 2600 ft x 600 ft.

Apron A (extended one) is 1300 ft x 600 ft.

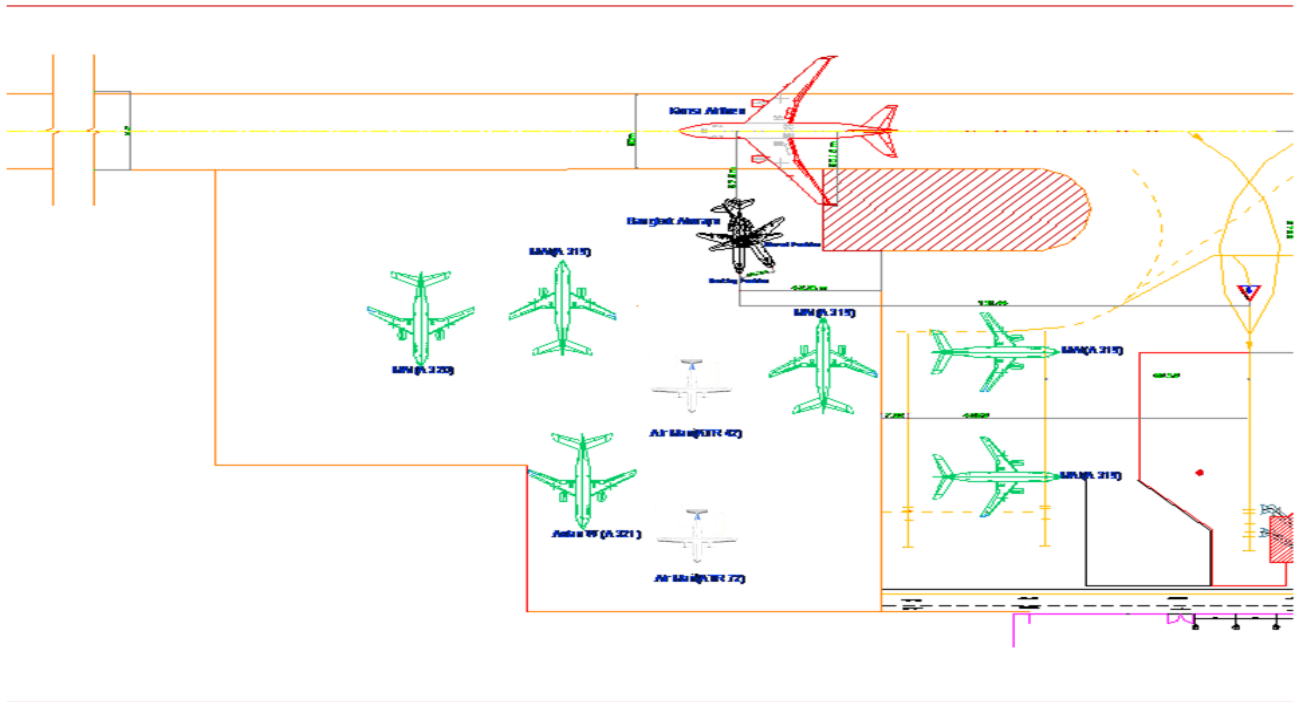


Figure 2 . Aircraft Parking Position

1.11 Recorders

1.11.1 Flight Recorder

The aircraft (HL-7538) was fitted with a Honeywell Solid State Flight Data Recorder (Model: SSUFDR) PN 980- 4700/042, S/N SSFDR-11687. The Recorder was successfully downloaded and analyzed at AAIB, Singapore.



1.11.2 Cockpit Voice Recorder

The aircraft was fitted a Fairchild cockpit voice recorder model FA-2100, P/N2100-1020-02 S\N 000224874. CVR recording periods are about two hours and successfully transcribed at AAIB, Singapore.



1.12 Wreckage, site and impact information

The coordinates of accident site is Latitude N 1653' 58.5", Longitude E.96 7' 50.70".When Myanmar Aircraft Investigation Bureau(MAIB) investigators arrived at the occurrence site, both aircraft were present, specifically Bangkok Airways aircraft was cordoned and stood guard by the security. After that, the investigators collected the debris on the ground from both of the affected aircraft(It was found that the broken part of Korean Air aircraft winglet was fallen and left behind on the apron close to the Bangkok Airways aircraft).Measurements and photographs were taken of the site and casual interviews were conducted among witnesses.

1.13 Medical and Pathological information

No one on board the aircraft or on the ground was injured .There was no medical examination for pilot after the occurrence.

1.14 Fire

There was no fire in the consequence of the occurrence.

1.15 Survival Aspects

The on duty Air Traffic Controller at Yangon International Airport contacted to Korean Air (HL-7538) pilots and gave them information about the occurrence as soon as he got the information from the Passenger Loading Bridge (PLB) operator, and (HL-7538) returned to Yangon International Airport and safely landed at about 00h55 (local time) on 13 February. There is no survival aspects.

1.16 Organizational and Management Information

1.16.1 Yangon Airport Group Co. ,Ltd(Ground Handling Agent)

Yangon Airport Group Co. ,Ltd has been established since 1st January, 2011, headed by Managing Director. GESD (Ground Equipment Services) headed by a manager is one of branches in YAG (Yangon Airport Group Co., Ltd), which consists of (119) staff to carry out the functions such as Marshalling ,Push Back ,Loading and unloading of Passengers and Baggages, Passengers and Baggage transportation Supplying Air Starter Unit and Group Power Unit. It is undertaking the ground handling responsibility of the following airlines:

- (1) Thai Airways International (TG)
- (2) Bangkok Airways International (PG)
- (3) Air Asia (Malaysia) (AK)
- (4) Tiger Airways (TR)

For Airside activities,(55) staff are being assigned to perform such functions. There were two shifts, Shift A and Shift B, in the company to perform their ground handling tasks. One shift consists of at least (25) staff and were given training to carry out their respective duties, however, on that day the operator assistant task. Prior to the occurrence, the ground handling team allocated the PG aircraft on the same spot about two or three times.

1.16.2 Apron Management Team, Yangon International Airport

The Apron Management Team has been established since 30th, October 2010 at the Yangon International Airport, which is responsible for **allocation of aircraft stand, control of aircraft and vehicle operating on the apron and monitoring safety of operations** with close coordination with ATS unit. Previously, the team consisted of (8) members, and for the time being, there were (4) staff left which divided into two shifts to carry out day-to-day operations for **day time only**. Most of them have been trained in Civil Aviation Training Institute (CATI), Myanmar. Apron management team's working hours was from 6am to 5pm;

1.17 Additional information

1.17.1 Testimony of Korean Air Pilot

He stated that he taxied to runway-03 along taxiway -A at 23h51. There were (2) flight crew, (10) cabin crew and (134) passengers, altogether (146) persons on board. When taxiing, the visibility was about 6000m, taxi speed was about 12 knots. He did neither notice nor the occurrence with Bangkok Airways aircraft nor heard any noise, however, he did feel slight movement of the aircraft when taxiing; he thought that it was because of the rough uneven taxiway surface. About ten minutes after take-off, he got the information from Mingalardone control tower, which KE 472 should return to Yangon because Bangkok Airways aircraft was damaged and KE472's part of Left wing tip was dropped off.

1.17.2 Testimony of Korean Air First Officer

He stated that the aircraft taxied to Runway-03 on the centre line of taxiway-A at 23h51. There were (12) crew and (134) passengers on board. When taxiing, the visibility was about 6000m, taxi speed was about 10 to 12 knots. He did not notice about the occurrence with Bangkok Airways aircraft and any noise either, however, he **felt light rattle** when taxiing; he also thought that it was because of the bump due to unsmooth surface. He said that there was no obstacle around the aircraft according to Jespersen airport chart or NOTAM and it was too dark to see the Bangkok Airways aircraft and his seat was on the right side so he could not see on his left side view.

1.17.3 Testimony of Duty Air Traffic Controller

The duty air traffic controller stated that KAL 472(HL 7538) made contact to Ground Control for Yangon-Seoul flight at 23 h 47to request push back and taxi for a runway- 03 take off. During taxi of KAL 472 there was no significant information was received. At 00h05,it was cleared for take-off from runway 03. About 40 nm away from Yangon, it was reported that the PLB operator informed that the winglet of Korean Air aircraft and the rudder of Bangkok Airways aircraft were damaged by the occurrence. The on duty controller contacted to KAL 472 and reported about the occurrence, the pilot replied that his aircraft was normal.

The controller repeated about the occurrence and gave advice to return to Yangon for the safety of the passengers and the aircraft. The Korean Air pilot then replied to contact the Korean Air ground staff in Yangon to check the occurrence site. After then the pilot said that he would hold for ten minutes and check the aircraft. A few minutes later, the Korean Air pilot replied that he would return to Yangon and at 00h55, KAL 472 landed safely.

He also stated that he could not see clearly apron-A (newly constructed apron) because of the new airport terminal structure (which is being built).

It would be better to install CCTV cameras. There should be more clear markings and signs and lighting for visual aids and coordination activities between apron management team, ATC tower and PLB operators not to encounter such an occurrence.

1.17.4 Testimony of a Ground Handling Staff

He stated that he was the leader of Shift B. His company was responsible to carry out the ground handling tasks for the contracted airlines. There were (27) staff in Shift B altogether. At the same time, his team could handle ground handling tasks for up to three aircraft. On that day, on 12th February 2015 before PG 705 (HS-PGA) arrived, he asked his team to receive PG 705(HS-PGA) at **Zero Parking**. When PG 705(HS-PGA) got to this spot, there were two MAI aircrafts around that spot. Therefore, he reminded them to be more careful. At the time of receiving the aircraft, everything was arranged as per the company procedures. He said that he had contacted to PLB operator and got the information to park PG 705 (HS- PGA) at **Zero Parking** on which the aircraft was

allocated at least four or five times. Previously for allocation of aircraft, the aircraft were parked as per the slot arrangement by **Apron Management Team** (Yangon International Airport).

1.17.5 Testimony of the mar-shaller

He stated that he was an operator assistant and belonged to Shift B. He had joined that company for about two years. On that day he performed as a marshaller and received PG 705(HS-PGA) at that spot (Zero Parking) after getting the information from PLB operator. It was not the first time the aircraft was allocated around that area, probably three or four times. As far as he remembered right, there were (8) aircrafts around Bangkok Airways aircraft (HS-PGA) when it was parked. He could not guess exactly how far it is from the taxiway centerline to his parked aircraft. He also related that there was no marking on the area for aircraft to park.

1.17.6 Testimony of Bangkok Airways Pilot

He stated that he had flown to Yangon International Airport for about two years. After landing at Yangon airport (VOR 21, Runway 21) Mingalardon tower cleared us to vacate the runway via taxiway B and Mingalardon ground cleared us for a right turn, follow the marshaller to the parking stand. Facing to the terminal building he followed marshaller's signal "**Straight Ahead**" and "**Stop**" until his aircraft came to complete stop. After that he conducted the inspection (walk around check).He understood that the present parking area was well clear of movement area and was not able to see taxiway marking due to dark night and dim apron floodlight.

1.17.7 Testimony of Yangon Apron Management Personnel

He stated that he had been in the apron management team since 30th October, 2010 when it was firstly established. Then it consisted of (8) members but now for some reasons, there were only (5) members left; which had been divided into two Shifts performing their designated tasks in **day time** .There were (16) aircraft stands as per AIP, Myanmar and Apron was newly constructed one which has not been updated and published in AIP yet. As increasing demand of traffic, **about 32 aircraft** (excluding non- scheduled flights) had to park on the apron during night time. As a consequence,

because of limited space and unbalanced demand and capacity, the double parking allocation of aircraft had to be practiced.

Also, his team had difficulty to use the established procedures and take the enforcement action as required by the aerodrome manual and by Myanmar Civil Aviation Authority. He also related that, there was no parking stand called by the name "Zero Parking" in the AIP (but some airside personnel took that place for Zero Parking and used unofficially this wording). Regarding this occurrence, the ground handling agent (Yangon Airport Group) previously had close coordination with the apron management team to carry out their tasks; especially for aircraft allocations. However since a few months, they hardly contact and coordinate with us for that case.

Duty officers conducted the runway inspection twice a day, and like apron duty men, monitored and inspected the day-to-day operations on the apron throughout the day manually.

PG 705/706 flight was a daily scheduled flight, arriving at 21h30 at Yangon International Airport, having an overnight and the next morning leaving Yangon at 06 h 05. That place on which the PG 705/706(HS PGA)flight parked on that day was not approved by the Apron Management Team. The apron management team had also instructed and given advice to international and domestic airlines to operate, handle their aircraft in a safe and orderly manner; especially in compliance with established procedures and ICAO requirements. He also explained that the taxiway centerline was 47.5 meter away from any object because Yangon Airport's aerodrome code was 4E (as per Annex 14).

1.17.8 Testimony of witness

He stated that he belonged to Myanmar Petroleum Product Enterprise and was working with his colleague in the airside close to **apron A**. At 12h02 he heard loud nose in the direction of apron A and looked to that direction; in doing so he found out that the Bangkok Airways aircraft (HS- PGA) had moved and tilted; he went to the PLB office to inform them about that occurrence. Then he proceeded to the occurrence site with a PLB operator, there, they found out that the empennage of Bangkok Airways aircraft

(HS- PGA) was damaged and a piece of debris about 3 feet long was on the ground under the tail section. He noticed that the lighting was dim and that HS-PGA was parked close to the taxiway A. Finally at 12h55 the Korean Air landed back to Yangon Airport.

2 ANALYSIS

2.1 Introduction

The analysis showed that the occurrence (Serious Incident) was due to unsafe condition and contributed factors. To improve operational safety, we need to focus not just on individuals, but on the local hazards and local threats.

2.2 Related information

2.2.1) Occurrence events

At 23h 55 (local time),HL-7538 taxi out along taxi way A for takeoff from runway 03. During taxi, the wingtip struck to the empennage of HS-PGA which was parked on Apron A for night stop. There was no moon light on that night.

2.2.2) Yangon International Airport Apron information

There are eleven aircraft parking stand, plus five night parking bays on the existing apron and four aircraft parking stands on apron A (new apron) for a total of twenty possible parking stands. **However up to 32 aircraft had park on the whole apron, which means apron congestion has encountered and update correctness number of parking stands should be addressed shown in Myanmar AIP and Jespersen publication..**

Apron A is a newly constructed area in which lighting facilities had not completed, as a result the lighting was not able to cover up to the edge of Apron A . **However there was no taxiway lights on that part of taxiway A.**

2.2.3) Parking information

Ground handling team had parked the ATR 72-212 A HS-PGA on zero parking zone which was within the apron-A area (newly constructed apron). There were two other aircrafts around that spot. **However it is not a designated place for aircraft parking and it not specified in AIP.** Taxiway A is 30 meters large. As per Annex .14, YIA Code letter Taxiway minimum separation distance from taxiway center line to object must 47, 5 meters. **However HS-PGA was parked 27, 3 meters from the taxiway center line.**

2.3 Over view of the Operation

2.3.1) Bangkok Airways, ATR 72-212 A (HS-PGA)

At 21h00 local time HS-PGA landed on runway21, and ATC cleared for vacating the runway via taxiway B. Facing to the terminal building he followed marshaled signal "Straight Ahead" and "Stop". After the Pilot had conducted his walk around check, he thought that the parking area was clear of movement. He was not able to see taxiway marking due to no moon night and dim apron flood light. **However, it is need more carefully to look around and check for safety distance during dark night and poor lighting condition of Apron.**

2.3.2) Korean Air, Airbus A-330-200(HL-7538)

HL-7538 was pushed back to taxiway A and taxied out to runway 03 along taxiway A. Although taxiway A had been provided with blue taxiway edge lights, there is no taxiway center light on that part of taxiway A. HL-7538 flight crew taxi out along the taxi way centre line with taxi light. The flight crew were carefully looking around during taxi but could not see the parked aircraft due to no lighting conditions of the Apron and no moon light. **However during dark night and dim apron flood light condition, should be more carefully have a look around outside.**

2.4 Local Condition

As traffic demand increases and because of the limited space available and unbalanced demand and capacity, the double parking allocation of aircraft had to be practiced. There are arrangements for new international airport also. **However, Yangon International Airport need short term planning for safety parking area.**

Yangon International Airport, Apron Management team has been established since 2010, which is responsible for allocation of aircraft stand, control of aircraft and vehicle operating on the apron and monitoring safety of operations.

However, existing condition of apron congestion, Apron Management team need to cooperate more and to oversight upon their ground handling teams.

2.5 Risk Control

Several risk controls were identified is being safety factors. Hazard is a condition with potential of causing loss and risk is the chance that something is going to happen and the consequence if it is does.

Ground handling staff (YAG) handle (HS-PGA) on Zero parking area where the aircraft was allocated at least four or five times. Previously, there were only short wing span aircrafts passing along taxi way A and no occurrence happened. The A.330 wingspan is 60,3 meters and HS-PGA empennage was only 27,3meters away from the taxiway center line.

However ground handling teams need to improve the training of their staff regarding apron safety Management.

3 CONCLUSIONS

3.1 Findings

From the evidence available, the following findings are made. These findings should not be read as apportioning blame or liability to any particular organization or individual:

1. Bangkok Airway aircraft (HS-PGA) was night stop parked (27.3) meter from the taxiway centerline and Korean Air (HL-3758) wing tip was (30.15) meter from taxiway centre line.
2. The ground handling staff need to be clearly obtained the aerodrome layout well and need to look around check.
3. There was weak communication between ATC, Apron Management Team and Ground Handling Team.
4. At the dim apron flood light of dark night and unclear marking condition, Bangkok Airways Pilot need to be more carefully look around check of aircraft parking position and meet with taxiway minimum separation distance or not.
5. Downloading of flight Recorder, HS- 7538 aircraft, Korean KE472 taxied out along taxiway centre line and taxi speed 6-8 Knots.
6. Korean cockpit crews need to be more carefully outside during dark night and dim flood light of Apron.
7. Recording of cockpit voice recorder, communication was not very clear, however Korean cockpit crew need to take immediate action for the safety of aircraft after receiving information from ATC.
8. Ground Handling team need more detail procedures regarding Aircraft Ground Handling.
9. There was double parking allocation of aircraft system in place in Yangon International Airport because the traffic demand exceeded the current capacity.
10. There were insufficient and unclear markings for the safe operation of aircraft on Apron A.
11. Apron Management Team operating hours did not include all hours that the airport is operational.
12. **Apron A** was not published and updated in AIP even though it had been used for aircraft operations.
13. The Air Traffic controllers need to ensure information whether there was any clearance on the maneuvering area or not before approving the requested information (MCAI part 5).

3.2 Cause

Ground Collision Occurrence (Serious Incident) was due to insufficient clearance between taxiway centre line and the parked aircraft.

There were several contributing factors:

- The airport was congested with 32 aircrafts for 20 parking stands.
- Bangkok Airways ATR72 parking position was not on a proper stand.
- Yangon airport apron management was closed.
- The insufficient lightings, and the dark night did not allow Korean Air pilots to look outside efficiently for obstacle.
- ATC cannot see the apron A because there is a building terminal in between.

4 SAFETY RECOMMENDATIONS

To reduce and eliminate of accidents and serious incidents, MAIB recommended The followings:-

4.1 The Ground Handling Company should review training outcomes of staff to include a particular attention to the reporting of safety hazards to responsible authorities and ensure appropriate countermeasures are included in Aircraft Handling Procedures.

4.2 Bangkok Airways should ensure that its pilots to more familiar with the layout of the airport they operate to, and in uncertain situation should request the marshaller or authorized related personnel for accurate verification of related distance whether it meets requirements.

4.3 Korean Air should ensure that its pilots are aware of the airport development project and prevailing situation at the airport.

4.4 The Airport operator should review the procedures on coordination among Apron Management Team, Ground Handlers and Air Traffic Control regarding safe operation and allocation of aircraft.

4.5 The Airport operator should update the information in AIP in a timely and in an accurate manner and oversee the apron activities in a more powerful, effective and efficient manner not to incur such occurrences on the movement area.

4.6 ATC should be more information to obstructions on the movement areas and aware of the airport and prevailing situation at the airport.

5. SAFETY ACTION

5.1 DCA held the meeting with respect to this occurrence with the airlines, the airport operator, ATC and ground handlers; had reviewed operational status and the capacity and demand of the Yangon International Airport and instructed them to take the necessary corrective action in due course.

5.2 The airport operator got the apron safety line markings painted.



Investigator -in -charge

