TRANSPORTATION SAFETY BUREAU

# FINAL REPORT

## 2011-269-4P
## SERIOUS INCIDENT

## LHBP
## 14.11.2011.

## Boeing 737-800
## VP-BNG

The sole objective of the technical investigation is to reveal the causes and circumstances of aviation accidents, incidents or irregularities and to initiate the necessary technical measures and make recommendations in order to prevent similar cases in the future. It is not the purpose of this activity to apportion blame or liability.

## This present investigation was carried out on the basis of

- Act XCVII of 1995 on aviation,
- Annex 13 of MTCW (Ministry of Transport, Communications and Water) Decree 20/1997. (X. 21.) on the declaration of the annexes of the Convention on International Civil Aviation signed in Chicago on 7th December 1944,
- Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents (hereinafter referred to as Kbvt.),
- MET Decree 123/2005 (XII. 29.) on the regulations of the technical investigation of aviation accidents, incidents and irregularities,
- In absence of other related regulation of the Kbvt., the Transportation Safety Bureau of Hungary carried out the investigation in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service,
- The Kbvt. and the MET Decree 123/2005 (XII. 29.) jointly serve the compliance with the following EU acts:
    a) Council Directive 94/56/EC of 21 November 1994 establishing the fundamental principles governing the investigation of civil aviation accidents and incidents, with the exception of its Annex;
    b) Directive 2003/42/EC of the European Parliament and of the Council of 13 June 2003 on occurrence reporting in civil aviation, with the exception of its Annex I and Annex II.

The competence of the Transportation Safety Bureau of Hungary is based on the Kbvt. until 31st December 2006 and on Government Decree 278/2006 (XII. 23.) from 1st January 2007 respectively.

## Under the aforementioned regulations

- The Transportation Safety Bureau of Hungary shall investigate aviation accidents and serious aviation incidents.
- The Transportation Safety Bureau of Hungary may investigate aviation incidents and irregularities which - in its judgement - would have resulted in accidents in other circumstances.
- The technical investigation is independent of any administrative, infringement or criminal procedures.
- In addition to the aforementioned laws, the ICAO DOC 9756 and DOC 6920 (Manual of Aircraft Accident Investigation) are applicable.
- This present Final Report shall not be binding, nor shall an appeal be lodged against it.

Persons participating in the technical investigation did not act as experts in other procedures concerning the same case and shall not do so in the future.

The IC shall safe keep the data having come to their knowledge in the course of the technical investigation. Furthermore the IC shall not be obliged to make the data – regarding which the owner of the data could have refused the disclosure of the data pursuant to the relevant act – available to other authorities.

This present Final Report was completed based on the Draft Report compiled by the IC and approved by the Director-General of TSB and by the reflections from the concerned parties and organisations.

# DEFINITIONS AND ABBREVIATIONS

| | |
|---|---|
| AA | Aeroplex Area |
| AA | Aeroplex Area, refers to the apron in front of ACE hangar |
| ACE | Aeroplex of Central Europe Ltd. |
| AGU1 | Terminal1 Apron Guide |
| AOCC | Airport Operation Control Center |
| AODM | Airport Operation Duty Manager |
| AOO | Airfield Operations Officer/Apron Supervisor |
| A-SMGCS | Advanced Surface Movement Guidance and Control System |
| BA Plc | Budapest Airport Private limited company, the operator of Budapest Liszt Ferenc International Airport |
| BUD | IATA code for Budapest Liszt Ferenc Nemzetközi Repülőtér |
| CCTV | Closed Circuit Television, security video camera recording system |
| CVR | Cockpit Voice Recorder |
| DAM | Duty Airport Manager |
| eAIP | electronic Aeronautical Information Publication |
| FBÖ | Armed Security Guard, Fegyveres Biztonsági Őrség |
| FDR | Flight Data Recorder |
| FTWR | Ferihegy Tower |
| GRD | Ground Control Service |
| HC | HungaroControl Zrt.Plc. |
| IATA | International Air Transport Association |
| IC | Investigating Committee |
| ICAO | International Civil Aviation Organization |
| Kbvt. | Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents; a légi-, a vasúti és a víziközlekedési balesetek és egyéb közlekedési események szakmai vizsgálatáról szóló 2005. évi CLXXXIV. törvény |
| LHBP | ICAO code for Budapest Liszt Ferenc International Airport |

| | |
|---|---|
| MET | Ministry of Economy and Transport |
| NTA DAT | National Transport Authority, Directorate for Air Transport |
| OOO | Общество с ограниченной ответсвенностью<br>Korlátolt felelősségű társaság |
| OOO | Общество с ограниченной ответсвенностью, Private Limited Company, Plc |
| OPS | Airport Operations Service |
| RWY | Runway |
| SRA | Security Restricted Area |
| TSB | Transportation Safety Bureau |
| TWR | Tower |
| TWY | Taxiway |
| UUDD | ICAO code for Domogyedovo Airport |

# SYNOPSIS

| Occurrence category | | serious incident |
|---|---|---|
| Aircraft | class | fixed wing aircraft |
| | manufacturer | The Boeing Company |
| | type | Boeing 737-800 |
| | registration | VP-BNG |
| | operator | OOO Globus |
| Occurrence | date and time (LT) | 14 November 2011, 11:14 |
| | location | LHBP ACE AA |

| Aircraft | class | fixed wing aircraft |
|---|---|---|
| | manufacturer | The Boeing Company |
| | type | Boeing 737-800 |
| | registration | LN-NOD |
| | operator | Norwegian Air Shuttle As |

There was no injury.

Both aircraft were damaged.

**Reports and notifications**

The occurrence was reported to the duty services of TSB by the TWR at 11:37 on 14 November 2011.

TSB promptly notified the duty officer of NTA DAT about the occurence.

**Investigating committee**

The Director-General of TSB appointed the following Investigating Committee (hereinafter referred to as IC) on 14 November 2011:

| | | |
|---|---|---|
| Investigator-in-Charge | László Gréz | investigator |
| member | György Háy | investigator |
| member | Péter Király | field technician |

**Summary of the investigation**

The IC arrived at the scene at 11:50 on 14 November 2011, where it took photos, interviewed the pilots, the eyewitnesses as well as the AOO and DAM at their duty stations. The IC also prepared a site survey protocol.

The IC requested documents, video and audio recordings from ACE, BA Plc (the operator of the airport), and from the operator of the aircraft. The IC also requested the A-SMGCS data from the operator of the system (Hungarocontrol).

The A-SMGCS data, however, did not provide useful information because aircraft movements in certain areas of the airport – including maintenance aprons - had been routinely masked before recording.

The marshalling vehicle had been moved prior to the site survey therefore its exact path could not be determined. It was necessary to look for additional witnesses and interview them.

The final report is based on the findings of the site survey, the eyewitnesses' accounts, the analysis of the video recordings, the evaluation of the FDR, other documents and aircraft documentation.

## Short summary of the occurrence

The B737 aircraft (registration VP-BNG, B737, referred to as VP-BNG thereinafter) arrived at LHBP for scheduled maintenance to be performed by ACE. Prior to the arival the AOO checked the maintenance apron and decided that the marshalling of the aircraft through there was safe. After landing the aircraft taxied until connector road M20. From there the AOO provided marshalling with his service vehicle.

The aircraft followed the marshaller on connector road M20. The vehicle left the centerline just before reaching the end of the right turn curve and moved on a path to the right from the centerline. The aircraft, however, basically stayed on the centerline and taxied just 1 metre to the right from it. The AOO stated in his interview that he did not notice that the aircraft did not follow his vehicle and went on with the marshalling.

The aircraft collided into the right horizontal stabiliser of a parked aircraft (registration LN-NOD, B737-800, referred to as LN-NOD thereinafter) with its left winglet while taxiing on the ACE AA. The pilots noticed the collision, stopped the aircraft and shut down the engines.

The IC determined that the collision was caused by human factors related to the AOO.

The IC decided that is was reasonable to issue safety recommendations addressed to BA Plc and Hungarocontrol with regard to the usage of M20 and M30 connector roads, the amendment of eAIP, and the recording of A-SMGCS system data.

# 1. FACTUAL INFORMATION

## 1.1 History of the flight

The AOCC assigned the A3 apron of the ACE AA for the parking of HA-LKE, B737-800 aircraft in the morning of 14 November 2011. This apron, however, had already been occupied by a Kyrgyz aircraft that the ACE stored there without knowledge and approval of AOCC. The employer responsible for the towing of HA-LKE decided to park the aircraft in front of M20 connector road. The aircraft was marked with warning signs.

The same day, the ACE planned certain maintenance work on aircraft LN-NOD, B737-800 that could not be done inside the hangar. The aircraft therefore was towed out onto the maintenance apron and parked in an angled position (45 degrees between its longitudinal axis and the hangar door plane).

Also the same day, around 11:00 another aircraft (VP-BNG, B737-800) was expected for scheduled maintenance. An ACE employee was assigned to meet the aircraft and supervise the maintenance.

The apron duty service notified the AOO about the arriving aircraft and the planned taxi route through M20 connector road around 11:00. The AOO, in accordance with his Job Description, checked the AA if it was free of obstacles and decided that the marshalling was possible with a marshaller („Follow Me") vehicle. He decided so regardless the fact that more than one aircraft were parked on the AA outside of the assigned parking area. The AOO did not take action to clear the obstacles.

The AOO asked the waiting ACE employee where to lead the arriving aircraft and was told to „bring it as quickly as possible, towards the SRA fence".

The AOO then checked if the ground vehicles on service road stopped at M20 crossing.

Meanwhile the expected aircraft (VP-BNG, flight GLP9981 from UUDD to LHBP) landed on RWY 31L on schedule and taxied through TWY C – Term1 G – TWY A1 to M20 waiting point. The flight crew (2 pilots) were in radio contact with the controllers, who cleared them for taxiing behind the marshaller vehicle.

The AOCC assigned the A4 apron for the VP-BNG, not being aware that that apron too was occupied by another Kyrgyz aircraft.

The AOO started the marshalling of the aircraft. First he drove between the radome of a Kyrgyz aircraft on A4 apron to the right and the HA-LKE to the left. The latter was parked not in the assigned parking area but marked with warning signs. During this manoeuvre the AOO left the centerline to the right.

According to the AOO, he was driving approximately 4-5 metres off the centerline to the right. He stated that the aircraft behind him also deviated to the right and followed his vehicle.

Having cleared the two parked aircraft, the AOO saw in the car mirror that the taxiing aircraft was getting back towards the centerline. He got out of the car and waved to the pilots to stop. According to his statement, the aircraft did not stop immediately, continued to move, and collided into the right horizontal stabiliser of the parked LN-NOD with its left winglet, and just then it stopped. There were workers near the LN-NOD but they assumed that the marshalling was being conducted with wing walkers present therefore they could not prevent the collision. The AOO reported the occurrence to his superior.


The Captain of the taxxiing aircraft told the IC that he was initially occupied with manoeuvring between the two parked aircraft. After he finished the 90-degree turn he saw another parked aircraft in front of the hangar that needed attention. He also saw the workers so he assumed they were watching the wingtips. Since these people did not give any signs, the Captain assumed he was safe to proceed and

they continued the taxiing behind the marshaller which was at this time converging back towards the centerline. The pilots also saw a man in a yellow vest and thought he would assist them to stop at the right position.

As the marshaller car stopped and the driver got out, the pilots noticed the bump and the sound of the collision. They stopped the aircraft and shut down the engines. The aircraft came to a stop about 1 metre right from the centerline.

The mechanic in the yellow vest was standing at the SRA fence, in line with the centerline. He told the IC that the aircraft was moving 1.5 - 2 metres off the centerline while the marshaller car was circa 3 metres off.

Another eyewitness told the IC that the AOO got out of the car just 1 second prior to the collision. The third eyewitness said the AOO got out of the vehicle in the moment of the collision and signalled to the pilots only after the collision.

According to the fourth eyewitness the AOO drove to the aircraft to check the outcome, then returned, but he parked the car right on the centerline, not in the spot where it originally was.

The FBÖ guards took the AOO from the scene therefore the IC could talk to him only at his duty station later.

## 1.2 Injuries to persons

There was no injury.

## 1.3 Aircraft damage

The affected two aircraft sustained repairable damage in the occurrence.

## 1.4 Other damage

The IC has no knowledge of other damage.

## 1.5 Personnel data

### 1.5.1 Pilot-in-Command

| **Age, citizenship, gender** | | 35, Russian male |
|---|---|---|
| **Licence data** | **type** | ATPL |
| | **valid until** | 17.01.2012. |
| | **medical check valid until** | 17.01.2012. |
| | **licence** | Captain |
| | **ratings** | instructor |
| **Total flight hours / number of take-offs** | **total** | 7 580 hrs |
| | **in the last 90 days** | 39 hrs |
| | **in the last 7 days** | 13:45 |
| | **in the last 24 hrs** | 2:45 |
| | **total on the given type** | 4,500 hrs |

### 1.5.2 First Officer

| | | |
|---|---|---|
| **Age, citizenship, gender** | | 35, Russian male |
| **Licence data** | **type** | CPL |
| | **valid until** | 16.12.2012. |
| | **medical check valid until** | 06.12.2012. |
| | **licence** | First Officer |
| | **ratings** | - |
| **Total flight hours / number of take-offs** | **total** | 930 hrs |
| | **in the last 90 days** | 79:30 |
| | **in the last 7 days** | 22:15 |
| | **in the last 24 hrs** | 2:45 |
| | **total on the given type** | 698 hrs |

### 1.5.3 AOO

| | | |
|---|---|---|
| **Age, citizenship, gender** | | 34, Hungarian male |
| **Licence data** | **type** | ODM, AOO |
| | **valid until** | 27.01.2014. |
| | **category in accordance with PART-66** | A, B |
| **Examination date** | | 27.01.2011. |
| **Rest time and duty time in the last 48 hrs** | | 32hrs, 16 hrs |
| **Experience at the given job and on the given type** | | 13 yrs |

## 1.6 Aircraft data

### 1.6.1. General, VP-BNG

| | |
|---|---|
| **Class** | fixed wing aircraft |
| **Manufacturer** | The Boeing Company |
| **Type** | B737-83N |
| **Date of manufacturing** | 2001 |
| **Serial number** | 30640 |
| **Registration** | VP-BNG |
| **State of registry** | Bermuda |
| **Owner** | ILFC (Bermuda) III, Ltd. |
| **Operator** | OOO Globus |
| **Call sign** | GLP9981 |

| | **flight time** | **number of landings** |
|---|---|---|
| **since manufacturing** | 34,649 hrs | 13,049 |
| **since last overhaul** | 4,318 hrs | 1,237 |
| **since last scheduled maintenance** | 483 hrs | 155 |

### General, LN-NOD

| | |
|---|---|
| **Class** | fixed wing aircraft |
| **Manufacturer** | The Boeing Company |
| **Type** | B737-83N |
| **Date of manufacturing** | 2008 |
| **Serial number** | 35280 |
| **Registration** | LN-NOD |
| **State of registry** | Norway |
| **Owner** | Norwegian Air Shuttle |
| **Operator** | Norwegian Air Shuttle |

## 1.6.2. Airworthiness data, VP-BNG

| | | |
|---|---|---|
| **Certificate of airworthiness** | **serial number** | 1241 |
| | **date of issue** | 20.08.2011. |
| | **valid until** | 19.08.2012. |
| | **last review date** | 11.08.2011. |
| | **restrictions** | - |

Fuel type used: JET-A1

The characteristics of the aircraft had no effect on the course of events therefore their analysis was not required.

# 1.7 Meteorological information

The occurrence took place in daytime, there was good visibility, without any mentionable meteorological phenomena present.

The meteorological data had no effect on the course of events therefore their analysis was not required.

# 1.8 Aids to navigation

The characteristics of the navigation instruments had no effect on the course of events therefore their analysis was not required.

# 1.9 Communications

Transcript of recorded radio communication:

- The radio chat between the taxi controller and Apron 1 reveals that apron A4 was assigned for the arriving VP-BNG.
- AGU1 notifies the AOO at 11:02:28 about an arriving 737 that shall be marshalled to the Aeroplex hangar.
- The AOO receives a notification at 11:12:16 on another arriving aircraft that also needs to be marshalled. Then the AGU1 and the AOO are discussing the marshalling between 11:12:45 – 11:13:07 to avoid misunderstandings. The radio chat ends at 11:13:22.

Other information:

The AOO told the IC that when he made an attempt to stop the marshalled aircraft, he did not use the illuminated STOP sign on the roof of the marshaller vehicle. The

IC established that the sign was operational. It was also established that there was no direct radio contact between the AOO and the marshalled aircraft.

## 1.10 Aerodrome information

The characteristics of the aerodromes had no effect on the course of events therefore their analysis was not required.

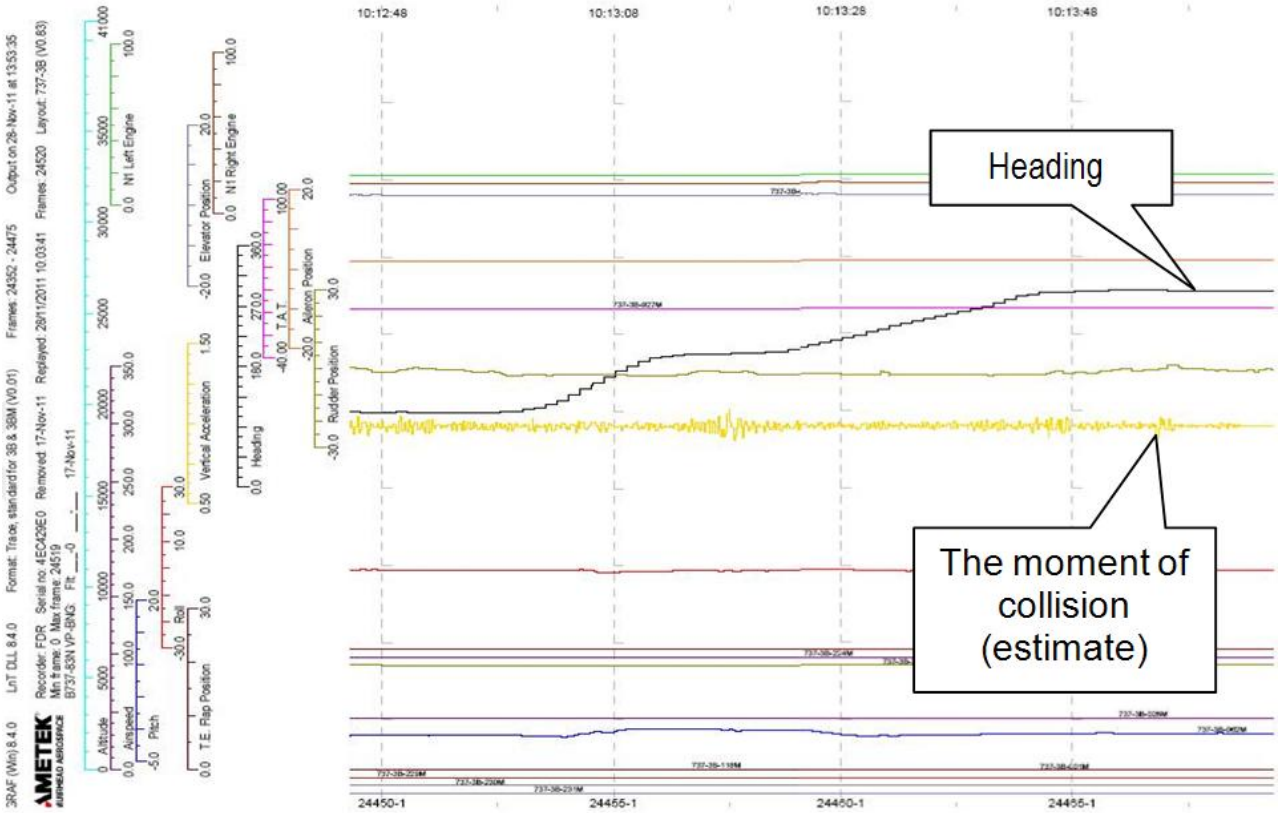
## 1.11 Data recorders

The air traffic control system and onboard data recording equipment were operational and the recorded data could be evaluated.

The data recorders listed in the certificate of airworthiness have been installed on board the aircraft.

| | | |
|---|---|---|
| **FDR** | **Manufacturer** | Honeywell |
| | **Type** | TSO-C12A/DO-178A S/W |
| | **Serial number** | 980-4700-04 |
| | **Download location** | United Kingdom |
| | **Whereabout and condition** | installed location, operational |

FDR data of the marshalling



| | | |
|---|---|---|
| **CVR** | **Manufacturer** | Honeywell |
| | **Type** | CVR 120-12586 |
| | **Serial number** | 980-60-22-001 |
| | **Number of recordings** | 4 |
| | **Download location** | LHBP |
| | **Whereabout and condition** | installed location, operational |

The CVR recordings were evaluated. The IC established that the recordings did not contain information relevant to the occurrence.

## 1.12 Wreckage and impact information

The left winglet of VP-BNG sustained serious damage and had to be replaced.

The RH horizontal stabiliser of LN-NOD sustained repairable damage.

## 1.13 Medical and pathological information

There was no examination by a medical examiner.

There are no indications of psycho-physical or other factors that could have affected the ability of the flight crew or the AOO. The AOO was submitted to an alcohol test at the FBÖ office. The test result was 'negative'.

## 1.14 Fire

There was no fire.

## 1.15 Survival aspects

There was no injury.

## 1.16 Tests and research

Tests and researches were not initiated by the IC.

## 1.17 Organizational and management information

At the time of the occurrence the following documents regulating aircraft movement on ACE aprons were in effect:

**BA Plc. Airport Rules, Part IV**

„1.9.1 Taxxiing on technical aprons

The AOO is responsible for making the planned taxi route free of obstacles.

In good visibility and in the absence of other restrictions the flight crews conduct the taxiing on their own.

DAM-AOO does nor supervise self-powered aircraft movements on the technical aprons. The pilot in command and the wing walkers are responsible for the safety of taxiing. However, if and when the pilot in command requests marshalling, the request shall be honoured and it is the AOO who is responsible for the safety of taxiing.

**Directive 10/ 2011. (III.25.) of Airport Operations Manager:**

„3ii) The parking places of a given apron are listed in the following table:"

*(This table states that aircraft can be parked at all parking places of the ACE apron by towing only.)*

*…*

3viii) „Entry to and exit from apron AA may be conducted only with marshaller vehicle assistance, regardless of visibility conditions. Marshalling is conducted between the apron exit point and the apron centerline."

## 1.18 Additional information

The starting of the marshalling (at 11:13:00) is clearly visible on the recordings of the D29-1-1 CCTV camera operated by FBÖ. The aircraft blocks the camera's view of the car after the second right turn. From that moment the aircraft does not change direction until it stops (at 11:14:00).

The A-SMGCS system operated by HungaroControl records and displays the movements of aircraft and ground vehicles that are equipped with a transponder. The IC, however, did not find useful information among the recording. The reason is that because the technical aprons do not belong to the HC's area of responsibility, these areas are artifically „masked" therefore no transponder or ground radar information coming from the technical aprons is displayed or recorded by the system in order to reduce workload on the controllers.

The eAIP does not contain reference to the information in the Airport Rules according to which aircraft are allowed to do self-powered taxiing in technical aprons.

The IC does not intend to publish additional information other than the factual information above.

## 1.19 Useful or effective investigation techniques

The investigation did not require techniques differing from the traditional approach.

# 2. ANALYSIS

According to the regulations in effect at the time of the occurence, aircraft could enter the ACE technical apron only with marshalling assistance and parking was allowed only by towing.

The aircraft followed the marshaller vehicle. As a number of aircraft had been parked at unassigned places, the AOO decided that it was safer to drive not on the centerline but parallel to it, to the right.

It was established that the aircraft ws taxiing approximately 1 m to the right from the centerline at the moment of the collision. The exact position and pre-collision route of the marshaller car could not be established.

Based on objective information – FDR and CCTV recordings – it was established that the aircraft dod not change direction after the second right turn. It was also established that the AOO's statement - according to which the aircraft initially followed the marshaller car but later it deviated to the left and this deviation led to the collision with another aircraft - is unsupported by the facts.

The IC believes that the course of events can be described by one of the following possible scenarios:

a) The aircraft followed the marshaller vehicle that was moving parallel to the apron centerline, 1 m to the right.

b) The aircraft followed the marshaller vehicle with a deviation to the left from the moment of leaving the last turn. The AOO noticed the deviation but decided to proceed.

c) The aircraft followed the marshaller vehicle with a deviation to the left from the moment of leaving the last turn. The AOO did not notice the deviation.

Taxiing on the technical apron shall be made with extra care and low speed due to the presence of numerous parked aircraft in a tight place. Wingtip clearances cannot be safely estimated either from the cockpit or from the marshaller vehicle. This is why it is an established practice to use wing walkers who can immediately alert the marshaller via radio who in turn can direct the pilots to stop the aircraft.

There was a number of ACE employees at the site and the AOO told the IC he relied on their warning in case there was a danger of collision. There were no wing walkers assigned.

It is possible that the AOO opted for the faster but less safe vehicle marshalling instead of the slow but safer on-foot directioning because he knew there were 2 more aircraft awaiting marshalling and he was the only AOO on duty at Terminal 1 that time. Using the radio while marshalling an aircraft may have distracted him from the main task at hand. He might have also been confused because he was told to direct the aircraft to apron 4 but it had already been occupied by a Kyrgyz aircraft.

The pilots of VP-BNG, however, could rightfully assume that they can follow safely the marshaller vehicle. Their assumption could be supported by the sight of numerous people standing around, and especially of a worker in a yellow vest at the end of the centerline near the fence. They thought that that person would assist them to stop the aircraft at the parking apron.

The direct cause of the occurrence was that the taxiing VP-BNG aircraft followed a route which had less than required clearance related to the parked LN-NOD aircraft.

The IC also established the following:

- Although the Airport Rules lists the conditions of taxiing under own power on M20 and M30 taxiways and the technical aprons, the eAIP in effect does not have related information therefore the flight crews had no access to the relevant information.
- The Airport Rules, Part IV, 1.9.1 and the Directive 10/2011. (III.25.) of Airport Operations Manager contradict each other (see **1.17- Organizational and management information** of this report). While the Airport Rules allows taxiing under own power, the directive prohibits such a movement.
- The ACE did not inform the AOCC on the occupancy status of the technical apron therefore AOCC assigned parking places for arriving aircraft that were not available.

# 3. CONCLUSIONS

## 3.1 Facts

The pilots and the AOO disposed of the necessary certificates, ratings and experience.

The aircraft was airworthy and had a valid certificate of airworthiness.

The AOO checked the technical apron prior to the marshalling but did not take action to remove the obstacles – irregularly parked aircraft - from the taxi route.

The AOCC an AOO did not have up-to-date information on the occupancy status of technical apron parking places.

The AOO attempted to lead the aircraft between parked aircraft by deviating from the centerline to the right. The taxiing aircraft also deviated from the centerline but the extent of this deviation was not sufficient and as a result the left winglet collided with the RH horizontal stabiliser of another parked aircraft that was partially blocking the taxi route.

Should the flight crew have serious doubt that the marshalling is not safe anymore and have stopped the aircraft, the collision could have been avoided.

The eAIP does not contain reference to the information in the Airport Rules according to which aircraft are allowed to do self-powered taxiing in technical aprons.

The marshaller car was moved from its position therefore its exact position and route could not be reconstructed.

The A-SMGCS (ground movement controlling radar) data did not provide useful information because aircraft movements in certain areas of the airport – including maintenance aprons - had been routinely masked before recording.

## 3.2 Causes of the occurrence

The IC has come to a conclusion that the serious incident was caused by an erroneous decision of the AOO with regard to starting the marshalling along a route that was partially blocked by a number of other - irregularly parked – aircraft.

During the marshalling the AOO deviated from the centerline with the intention of making it safer but the deviation of the aircraft that followed the vehicle was not enough to avoid the collision.

The time pressure on the AOO may have been a contributing factor. Since he was the only AOO on duty at Terminal 1A, he was pressed to marshall a number of aircraft arriving shortly one after another and this situation may have led him to accept unnecessary risk in exchange of saving time.

# 4. SAFETY RECOMMENDATIONS

The IC recommends to issue the following safety recommendations:

**BA2011-269-4P-1:** *It was established during the investigation that the Airport Operation Control Center (AOCC) assigned already occupied parking places for arriving aircraft.*

Transportation Safety Bureau recommends Budapest Airport Plc to develop and operate appropriate procedures that provide up-to-date information for AOCC regarding occupancy status of parking aprons at their disposal.

*Should the recommendation be accepted and implemented, it is expected that the handling and movements of aircraft will be troubled less frequently due to erroneous parking apron occupancy information.*

**BA2011-269-4P-2:** *It was established during the investigation that the Electronic Aeronautical Information Publication (eAIP) does not contain information related to aircraft movement in technical aprons.*

Transportation Safety Bureau recommends Budapest Airport Plc to initiate appropriate amendments to the eAIP.

*Should the recommendation be accepted and implemented, it is expected that the flight crews will be aware of the rules of aircraft movement in technical aprons prior to their arrival.*

**BA2011-269-4P-3:** *It was established during the investigation that the Advanced Surface Movement Guidance and Control System (A-SMGCS) operated by HungaroControl did not provide useful information for the investigation of the occurrence because radar and transponder information on certain areas – technical aprons in particular – is 'masked' and the information is neither displayed or recorded.*

Transportation Safety Bureau recommends HungaroControl to assess the possibility of recording the information provided by A-SMGCS *before* 'masking' the areas that of no interest for HungaroControl.

*Should the recommendation be accepted and implemented, it is expected that investigations of future occurrences in technical aprons and other 'masked' areas can be assisted by recorded information.*

Budapest, 19 September 2012.

| László GRÉZ | György HÁY | Péter KIRÁLY |
|---|---|---|
| IIC | IC member | IC member |

*NOTE:*

*This present document is the translation of the Hungarian version of the Final Report.*

*Although efforts have been made to translate it as accurately as possible, discrepancies may occur.*

*In this case, the Hungarian is the authentic, official version.*