KÖZLEKEDÉSBIZTONSÁGI SZERVEZET

FINAL REPORT

2015-0320-5
Railway Accident

Nógrádszakál Station
8 April 2015

The sole objective of the technical investigation is to reveal the causes and circumstances of serious railway accidents, railway accidents and railway incidents, 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 investigation was carried out on the basis of

- Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents (hereinafter referred to as Kbvt.),
- MND Decree 24/2012. (V.8.) on the detailed rules of the technical investigation of serious railway accidents, railway accidents, and railway incidents and on the detailed rules of investigation by the upkeeper,
- In absence of other related regulation of the Kbvt., the Transportation Safety Bureau of Hungary conducted the investigation in accordance with Act CXL of 2004 on the general rules of administrative authority procedure and service.

The Kbvt. and the MND Decree 24/2012. (V.8.) jointly serve compliance with the following EU acts: Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on the safety of the Community's railways and amending Council Directive 95/18/EC on the licensing of railway undertakings and Directive 2001/14/EC on the allocation of railway infrastructure capacity and the levying of charges for the use of railway infrastructure and safety certification (Railway Safety Directive).

The competence of the Transportation Safety Bureau of Hungary is based on Government Decree 278/2006 (XII. 23).

Under the aforementioned regulations

- The Transportation Safety Bureau of Hungary shall investigate serious railway accidents.
- The Transportation Safety Bureau of Hungary may investigate railway accidents and incidents which – in its judgement – could have led to more accidents with more serious consequences in other circumstances.
- The technical investigation is independent of any administrative, infringement or criminal procedures commenced in connection with a transportation accident or other occurrence.
- This Final Report shall not be binding, nor shall an appeal be lodged against it.

Incompatibility did not stand against the members of the IC. The 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 its disclosure pursuant to the relevant act – available for other authorities.

This Final Report

was based on the Draft Report prepared by the IC and sent to all interested parties (as stipulated by the relevant regulation) for comments.

Concurrently with the sending of the Draft Report, the Director General of TSB Hungary informed the people interested on the date of the closing meeting, and also invited all such people and organizations to such meeting.

No comment was received from the recipients relating to the Draft Report.

DEFINITIONS AND ABBREVIATIONS

SI	Station Instructions
ERA	European Railway Agency
MET	Ministry of Economy and Transport
NS	Network Statement
TBS	Transportation Bureau of Hungary
Kbvt.	Act CLXXXIV of 2005 on the technical investigation of aviation, railway and marine accidents and incidents and other transportation occurrences
MÁV Ltd.	MÁV Hungarian State Railways Private Company Limited by Shares
MND	Ministry of National Development
PSŽ a.s.	Prvá Slovenska Železničná
IC	Investigating Committee
VPE Kft.	Rail Capacity Allocation Office Limited Liability Company
ŽSSK CARGO	Železničná spoločnosť Cargo Slovakia, a.s.

SUMMARY

Type of occurrence	Railway accident
Character	Derailment of rolling stock
Time and date of occurrence	08 April 2015 07:36 hours
Location of occurrence	Nógrádszakál Station, Switch No. 1
Type of railway system	National
Type of movement	Freight train
Fatalities/ severe injuries	0/0
Infrastructure manager	MÁV Ltd.
Extent of damage	The derailed vehicle and the track were slightly damaged.
Registration number of the train(s) involved	83311
Operator	ŽSSK CARGO a.s.

Location of occurrence

Line 78, Nógrádszakál Station

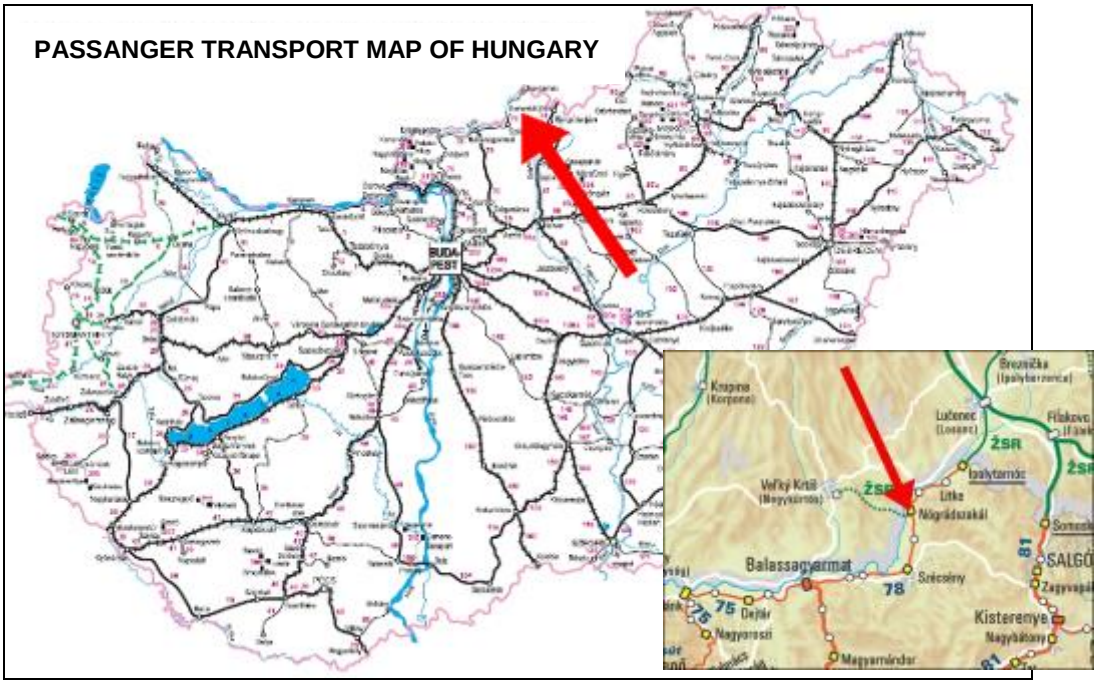


Figure 1: Location of the accident

Reports, notifications

The occurrence was reported to the duty service of TSB by the Chief Network Manager of MÁV Ltd. on 08 April 2015, at 08:38 hours (62 minutes after the time of the occurrence).

The Director General of TSB appointed the following investigating committee to perform a technical investigation of the railway accident on 08 April 2015:

Investigator-in-Charge Róbert Karosi Investigator

Member	Péter Demjén	Investigator

The occurrence was recorded in the database of the European Railway Agency (ERA) under number HU-4767.

Overview of the investigation

The IC:

- performed a site survey immediately after the occurrence;
- Questioned the station crew and the train crew on-site, and performed a technical test;
- requested and received the documents they thought necessary (documents of the train and train crew, relevant Station Instructions, etc.);
- consulted with traffic experts from the railway infrastructure manager,
- held reconciliation meeting with experts from VPE Kft.

Overview of the occurrence

On 8 April 2015, at 07:36 hours, the last two wagons of the train No. 83331, which was accessing Track III of Nógrádszakál Station and leaving after a stop were routed to Track II incidentally. The empty wagon No. 31 56 277 2073-5, Type Habbins, derailed and turned across.

Due to the occurrence, both the Balassagyarmat-Ipolytarnóc and the Nógrádszakál-Nógrádszakál state border railway lines were locked. The passengers on the trains were transported by replacement coaches between Balassagyarmat and Ipolytarnóc stations.

No person was injured in the occurrence.

During the site survey after the accident, the IC concluded that the occurrence may be attributed to human factors.

The site survey found that Shunt 1 of the station was changed over under the wheels of the moving train, and due to this, the front bogie of the wagon No. 31 56 277 2073-5 was routed to Track III, while its rear bogie was routed to Track II. The train ran through the station in this way, until the up side of the station where the track branches out toward Nagykürtös station, i.e. the distance between the centres of tracks begins to increase (i.e. not parallel anymore), and the misdirected wagon derailed. As a consequence of derailment, the main brake pipe of the freight train was damaged, which braked and stopped the train.

During the investigation, the IC concluded, independent of the cause of the occurrence, that the Station Instructions which regulates international traffic needs updating, and for this reason the IC suggests that a safety recommendation be issued in connection with the occurrence.

1. FACTUAL INFORMATION

1.1 Course of events

On the day of the occurrence, the train No. 83331 arrived at Ipolytarnóc Station at 07:04 hours.

As the train is driven from Ipolytarnóc station to Nógrádszakál station by the locomotive driver of PSŽ a.s., the train departed to Nógrádszakál at 07:06 hours, after the locomotive crew was changed.

The train accessed Nógrádszakál station with a clear entrance signal.

The locomotive stopped in front of the station office, i.e. the train did not fully enter the station, so its tail stayed outside the entrance signal. After repeated change of the engine drivers, and receiving the permit to start, the train departed.

On the way out, still within the switch zone, the last but one wagon (an empty four-axle freight wagon) was routed wrongly. The front bogie of the wagon ran on Track III and the rear bogie ran on Track II until the wagon derailed in the exit-side switching zone at the other end of the station.

The main brake pipe of the train No. 83331 was damaged as a consequence of derailment, and then the train was braked and stopped automatically.

Figure 2: Location of accident (Nógrádszakál Station)

1.2 Injuries to persons

Nobody was injured as an outcome of the occurrence.

1.3 Damage to railway vehicles

The empty freight wagons No. 31 56 2772 004-0, 31 56 277 2073-5 and 31 56 2772 079-2 affected in the accident were damaged as a consequence of the derailment.

Figure 3: The derailed and damaged vehicle at the scene of the occurrence

1.4 Damage to the infrastructure

As a consequence of the accident, the derailed wagons blocked the tracks of the station at the side towards Balassagyarmat and Nagykürtös (SK), and thus, the track became unfit for service both on the Aszód – Balassagyarmat – Ipolytarnóc line section (No. 78), and on the Nógrádszakál – Nagykürtös (SK) line section. The two wrongly routed wagons knocked over Signal B of the station.

1.5. Other damage

Until the reparation of the tracks, the passengers of the passenger trains were transported by replacement coaches between Balassagyarmat and Ipolytarnóc stations.

After the repair, railway traffic was restarted on 11 April 2015.

1.6 Crew data

1.6.1 The locomotive driver driving Train No. 83331 between Ipolytarnóc and Nógrádszakál stations:

Age	62 years
Gender	Male
Qualification	railway vehicle driver
Started service as locomotive driver	2009 (with current employer)
Validity of medical certificate	Valid
On duty since	8 April 2015, 06:00 hours; Ipolytarnóc Station

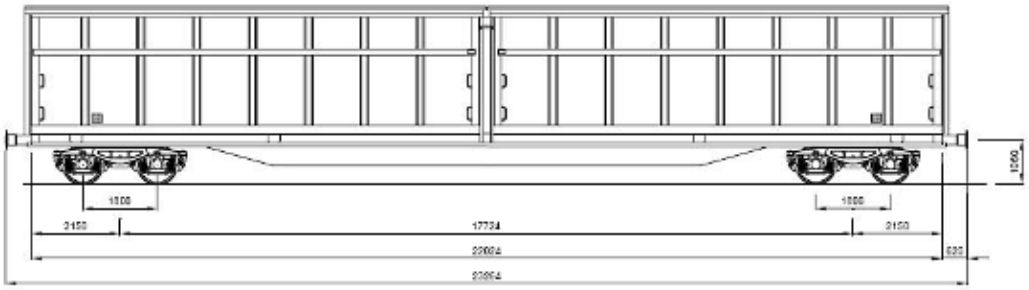
1.6.2 Traffic Manager at Nógrádszakál Station:

Age	49 years
Gender	Female
Qualification	Traffic Manager
Started railway service	1986
Validity of medical certificate	Valid
On duty since	8 April 2015, 06:00 hours

1.6.3 The pointsman at Nógrádszakál station:

Age	28 years
Gender	Male
Qualification	Switch operator
Started railway service	2007
Validity of medical certificate	Valid
On duty since	8 April 2015, 06:00 hours

1.7. Information on the derailed vehicle



Wagon technical parameters

Wagon series		Habbins
Digit interval		2770
Interoperability		31
Wagon length over the buffers		23,26 m
Wagon tare		26,50 t
Loading capacity	A B C D	37,50 t 45,50 t 55,50 t 63,50 t
Loading length		22,00 m
Loading width		2,84 m
Loading surface		62,40 m²
Loading height		2,80 m
Distance between floor and USR		1,20 m
Axle base / pivot pins distance		17,72 m
Loading volume		167,40 m³
Loading apertures	width	10,81 m
Palettes load capacity	EUR-palettes IP-palettes	63 42
Maximum loading capacity for evenly distributed freight		[m] — [t] a-a 4 22 b-b 7 25 c-c 10 28
Note		

Figure 4: Diagrammatic drawing and technical specifications of the derailed type Habbins freight wagon (Source: http://www.zscargo.sk)

1.7.1 Train information

Reg. no. of the train	83331
Train type	Freight train
Reg. no. of the locomotives	56 0742 3528; 56 742 2447
Path owner	ZSSK CARGO
Infrastructure manager	MÁV Ltd.
Train length	352 m
Tonnage	499 t
Prescribed braked weight percentage	35%

1.8 Information on the railway track and the safety installation

Article 302 of Chapter V in the part of the Treaty of Trianon which covers transport provides Czechoslovakia with the possibility of crossing the Hungarian section of the Ipoly Valley Railway (Losonc – Ipolytarnóc – Balassagyarmat – Drégelypalánk – Ipolyság).

The transportation demand emerging after the exploration of coal reserves in the Nógrád coal fields (located in the are connected to Czechoslovakia) required the construction of railway connection to the mines around Malé Straciny (Kishalom), which, however, could not be done in the Czechoslovakian area due to unfavourable geographical conditions.

The most practical solution was to connect the new railway section to the existing Ipoly Valley Railway. To implement this plan, a bilateral agreement was signed (3 March 1951), in which Hungary allowed Czechoslovakia to connect the new railway to the Hungarian railway network at Nógrádszakál station.

Figure 5: Ipoly Valley Railway
(Source: http://mkk.zpok.hu/hirlevel/images/1009_terkep_n.jpg)

Nógrádszakál station is an unprotected service location, where point lock key identification system is installed. The station is equipped with unprotected entry semaphores and distant signals.

The points at the up side of the station are switched locally, while the points at the down side are controlled via point wire. The control devices are installed in the station office from where the points cannot actually be seen.

1.9 Station information and traffic management

Nógrádszakál station belongs to the Station Management of Szécsény, MÁV Ltd., and is an intermediate station on the Aszód – Balassagyarmat – Ipolytarnóc single-track line. The station is located between the track sections No. 863+26 and 873+16.

The track connects to the line of ZSR in the section No. 2+41, where the state border is also located. The station takes part in the MÁV-ZSR “Peage” traffic between the Ipolytarnóc state border and Nógrádszakál state border.

Railway traffic is managed according to the Agreement of 1951 between the Hungarian People’s Republic and the Czechoslovakian People’s Republic and the Station Instructions prepared pursuant to such Agreement and effective as of 1 August 2009.

The ’one train only’ mode is applied between Szécsény and Nógrádszakál stations, as well as between Nógrádszakál and Ipolytarnóc stations.

The ’one train only’ mode is applied in the international traffic between Kishalom (Malé Straciny; SK) and Nógrádszakál stations.

1.10 Data recorder of the railway vehicles

On the day of the occurrence, the train No. 83311 was moved by the locomotives No. 56 0742 3528 and 56 742 2447.

Speed indicator with measuring limit of 150 km/h is in place in each locomotive, with a tape for recording speed values up to the speed of 150 km/h was also in place at the time of the occurrence. The values recorded on the tape were easy to read and evaluate.

1.11 Communications

No direct communication is available between the station crew and the train crew.

1.12 Meteorological information

The weather was calm and clear at the time of the accident. Distant vision was not reduced in the daylight conditions.

1.13 Survival aspects

There was no personal injury in the occurrence, and there was no immediate danger to life.

1.14 Tests and research

When investigating the scene of the occurrence, the IC performed a test to see how much time the operations performed by the pointsman require, following the steps explained by the pointsman.

The technical test performed at Nógrádszakál station on the day of the occurrence showed that the series of steps described by the pointsman require 15 to 20 seconds altogether.

1.15 Organisational and management information

Engine Drivers

In order to comply with the Network Statement, the freight trains moved by ŽSSK CARGO are moved by the locomotive drivers of PSŽ a.s. (a railway company operating in Hungary) in the track section in Hungary, who is aware of the instructions valid in the Hungarian network, knows the relevant line well, and has the necessary valid licenses.

The locomotive driver of PSŽ a.s gets on the locomotive at Ipolytarnóc station and gets off at Nógrádszakál station.

Switch positioning at the station

The locally controlled switches and the up side signals are operated by the pointsman, while the centrally controlled switches, locks and down side signals are operated by the traffic manager.

When a female traffic manager is on duty at the station, the entrance signal and its distant signal, as well as the wire switch and lock are also operated by the pointsman, based on written authorisation.

1.16 Rules and regulations

In connection with path requests, the Network Statement contains the following provisions, among others:

1.1.1.1.3 Major rights and obligations of the entities entitled to access

Major obligations of the entities entitled to access:

e) to employ personnel and contributing persons that comply with the national and international requirements in the field of railway safety, can speak and write Hungarian, and have the necessary vocational knowledge and have passed the required examinations.

1.6.1 Effect of the Network Statement

The current Network Statement is in effect from 14 December 2014, 00:00 hours to 14 December 2015, 24:00 hours.

The territorial effect of the Network Statement covers the open access railway networks operated by MÁV Ltd., and GYSEV Ltd.

The Station Instructions of Nógrádszakál station contains the following:

ÁVU 2.65: Local rules relevant to the border technology at railway stations at the state border

Traffic on the shared line (Peage) by MÁV and ZSR has been controlled according to the Implementation in effect as of 1 August 2009.

ÁVU 2.23 Operating the switches

2.23.1 Setting the switch for a train: Determining the assignment of the tasks of switch operation (F.2. 2.9.1. p.).

The locally controlled switches and the up side signals are operated by the pointsman, while the centrally controlled switches, locks and down side signals are operated by the traffic manager.

When a female traffic manager is on duty at the station, the entrance signal and its distant signal, as well as the wire switch and lock are also operated by the pointsman, based on written authorisation.

The time of issuing the order shall be recorded on a separate line in the log-book.

After the arrival and passing through of the train, the pointsman sets the entrance signal and its distant signal to default position on the basis of oral instruction from the traffic manager.

The pointsman sets the lock of the points to unlocked position, and sets the points to default position.

ÁVU 2.57: Receiving and observation of trains at the stations.

2.57.1 The location where the traffic manager receives the train if it is different from the usual scheme due to some special local cause (F.2. 15.18.13.3. a) subsection).

The traffic manager shall receive and observe the trains in the area in front of the station office.

2.57.2 Determining the location where pointsmen must receive the trains (F.2. 15.18.13.3. c) subsection).

Location where the pointsman must receive the train: the area in front of the pointsman's watch-box.

An interpretation of Line 3 of the Service Timetable used in Hungary

a 3. rovatban	*	Biztosított szolgálati hely, a bejárati jelző mindkét irányú behaladás sebességét jelzi.
a 3. rovatban	↔	nem biztosított szolgálati hely, bejárat kitérő irányba, ha a rovat üres = bejárat egyenes irányba.
a 3. rovatban	1	forgalmi szolgálattevő nincs, a vonat elsőnek jár be az állomásra.
a 3. rovatban	2	forgalmi szolgálattevő nincs, a vonat másodiknak jár be az állomásra.
a 3. rovatban	F	A vonat az állomáson foglalt vágányra jár be (F2 Utasítás 15.194 pont).

In Column 3: Station not protected with interlocking, access in diverging direction. If this box is not completed then the direction of access is straight.

Provision in F.2 Train Loading and Running Regulations relevant to the direction of access of the train:

Bejárati irány **15.18.2.** Nem biztosított szolgálati helyre bejáró vonatok személyzetével a Szolgálati menetrendkönyv és Menetrendi segédkönyv „A bejárat" c. rovatában közölni kell, hogy egyenes vagy kitérő irányba fognak behaladni. A mozdonyvezető a vonat behaladási sebességét ennek megfelelően köteles szabályozni.

A biztosított szolgálati helyre bejáró vonat a bejárati jelzőn csak a behaladás sebességére kap jelzést.

15.18.2.1. A vonatokat nem biztosított szolgálati helyen a menetrendben kijelölt irányba kell bejáratni.

“15.18.2.1. At stations not protected with interlocking, the trains must be authorised to access in the direction specified in the timetable.”

Station Instructions for the management of traffic on the Malé Straciny/Nógrádszakál – Ipolytarnóc/Lucenec line used jointly (Peage) by MÁV Ltd. and ZSR (as of 1 August 2009) – excerpt from the Station Instructions

“2.1 *Transit trains moving on the Peage line shall be managed according to the timetable prepared in a joint effort by the railway companies interested. The transit trains shall not stop or reduce their speed below the specified lower limit while in the territory of Hungary, except when:*

- *representatives of authorities so request,*
- *it is unavoidable due to opposing trains, notification of train crews, or other traffic-related issue,*
- *safe movement of the train is jeopardised,*
- *it is so required by some technical or operation issue (e.g.: restricted-speed running, malfunction of the pneumatic brake, communication problem)*
- *the train crew is ordered to do so (written instruction).*

4.5. *The service language between the neighbouring border stations is the Slovakian language. The service language on the Peage line section (in Hungary) is the Hungarian language, and thus, there must be at least one Hungarian speaking employee on the transit trains.*

5.12. *The ZSR train crew need not be notified of the alteration of the direction of access (the service timetable book of ZSR does not specify the direction of access).”*

Provision in Instruction F.2 relevant to the location of stopping of the trains

15.18.5. An arriving train shall be stopped at the station in such manner that it should not block or endanger the movement of other trains, and, at the same time, the front of the tail shall always be within the shunting limit signal and the tail of the train shall be within the shunting limit signal whenever possible.

…

15.18.5.4. Every train shall be stopped at latest at such a distance before the individual exit signal displaying Stop! signal that the displayed signal should be visible continuously; if there is no signal, the train shall be stopped before the shunting limit signal situated at the end of the path, even if the tail of the train has not yet arrived within the shunting limit signal.

1.17 Additional information

The IC finds no other circumstances important in addition to the above facts from the aspect of drawing conclusions and issuing safety recommendations; accordingly, the IC does not wish to present further data.

1.18 Similar occurrence at the location of the accident

There had been no similar occurrence at the location of the accident.

2. ANALYSIS

2.1 Circumstances of the occurrence

The traffic on the Losonc – Ipolytarnóc – Nógrádszakál – Nagykürtös railway is regulated by an international agreement. The original agreement was signed on 23 March 1951.

The currently effective Station Instructions relating to the contents of the Agreement has been in effect since 1 August 2009.

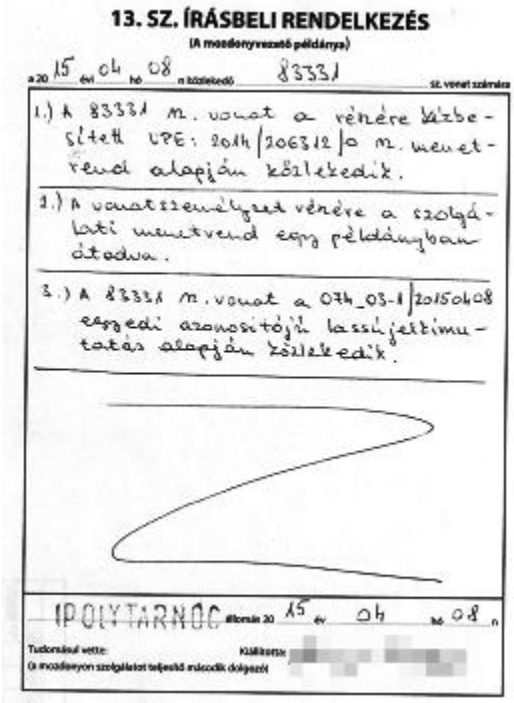
The composition, crew, braking, and maintenance of journey documents of the trains running through the line section (running in international traffic mode) are subject to the Slovakian regulations. Otherwise the instructions issued by the Hungarian party are to be followed, while any and all exceptions are covered in the Station Instructions.

Movement of the train

On the day of the occurrence, the train No. 83331 arrived at Ipolytarnóc station at 07:04 hours.

As the train is driven from Ipolytarnóc station to Nógrádszakál station by the locomotive driver of PSŽ a.s., the locomotive crew needed to be changed at Ipolytarnóc station. After this was performed, train continued its journey at 07:06 hours.

At Ipolytarnóc station, the train No. 83331 was given the Written Instruction No. 13, which specified the train crew the timetable and speed restriction schedule, and had the train crew signed the receipt of a copy of the service timetable used in Hungary.



13. SZ. ÍRÁSBELI RENDELKEZÉS

(A mozdonyvezető példánya)

a 20 15 évi 04 hó 08 n közlekedő 83331 sz. vonat számára

1.) A 83331 m. vonat a vénére kézbesített UPE: 2014/206312/0 m. menetrend alapján közlekedik.

2.) A vonatszemélyzet vénére a szolgálati menetrend egy példányban átadva.

3.) A 83331 m. vonat a 074_03-1/20150408 egyedi azonosítójú kassaljelzőmutatás alapján közlekedik.

IPOLYTARNÓC állomás 20 15 év 04 hó 08 n

Tudomásul vette: Kiállította:

(A mozdonyvezetőt szolgálatot teljesítő másodikdolgozó)

At 07:20 hours, the traffic manager of Nógrádszakál station ordered the pointsman on duty at Watch-box No. II to set the path for the train No. 83331. The traffic manager assigned Track No. III to be used by the train.

The pointsman at Watch-box No. II reported the setting of the exit path at 07:25 hours, and then left for the station office to operate the entrance signal (and its distant signal), as a lady was on duty as traffic manager on the day of the occurrence.

According to the Station Instructions, locally controlled switches and the up side signals are operated by the pointsman, while the centrally controlled switches, locks and down side signals are operated by the traffic manager. However, when a female traffic manager is on duty at the station, the entrance signal and its distant signal, as well as the wire switch and lock are also operated by the pointsman, based on written authorisation. (The written authorisation for the setting of the train path and for the operation of the signal has only been booked incompletely [see point 1.16].)

After setting the entry path, the traffic manager and the pointsman received the train in the area in front of the station office.

When approaching Nógrádszakál station, the locomotive driver of the train No. 83331 realised that the entrance signal of the station was clear, so he accessed Track II of the station.

While accessing the station, the freight train stopped at the station in such manner that its locomotives were at a distance of about 20 metres of the line station office. When it stopped, its tail was still outside of the entrance signal.

If the train had accessed the station fully, Track III would have fitted all of its vehicles as the available length of that track is 565 metres.

According to information available to the IC, the train crew had not been notified that the train would be stopped at a different spot, no Stop! signal was issued to the accessing train, it was the locomotive crew that choose the spot of stopping.

Path of train No. 83331 at the station

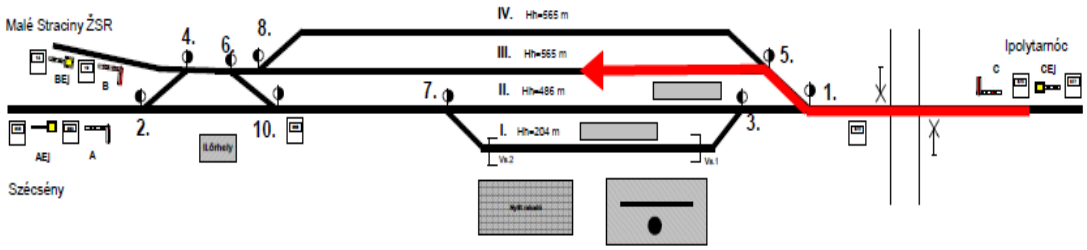


Figure 6: The route of the train at the station

After changing of the locomotive drivers, the driver working on the Hungarian track section got off the train, and, according to oral report, the train No. 83331 started upon receiving authorisation from the traffic manager. According to recorded data, the train increased its speed to 25 km/h after starting.

The pointsman went to the station office after the train started (according to his statement: when the trailing wagon of the train came within the entrance signal) to set the entrance signal to danger position.

However, in addition to setting the entrance signal, he also set the switch positioning lever to default position without ensuring that the train No. 83331 had left the switch. He set the switch at a moment of time when the front bogie of the last but one (Habbins series) wagon had already passed the switch, but the rear one had not yet.

During the on-site survey, the IC measured the time required by the series of actions listed by the pointsman. If the pointsman actually stayed at the spot at the time of the occurrence where he said later then it had taken to him about 15 to 20 seconds to walk from the area in front of the station building to the station office and perform the necessary operations on the equipment. The above period of time is sufficient for the trailing wagons of the train to cover the distance between the entrance signal and Switch No. 1, which confirms the reports.

As the bogie pivot pitch of the wagon is large enough (17.72 m) to allow setting the switch at a speed of 25 km/h, the rear bogie of the wagon was able to roll on straight instead of the originally set switch, as a result of switching under the moving vehicle.

The pointsman received no oral order from the traffic manager to operate the equipment.

The crew of the departing train did not detect the switching error and the fact that some vehicles were running on a separate track. They did not look back after departure. The observation of the train and the signals by looking back from the locomotive was hindered by the fact that locomotives of the series 742 have no rear-view mirror or camera system.

The pointsman on duty at the watch-box No. II was staying in the station office (to operate the switch and the signal) at the time of the occurrence, so he could not receive the train at the location specified for him in the Station Instructions, and there was no one at the up side of the station to detect the emergency situation and take action to stop the train.

Figure 7: Series 742 locomotives are not equipped with rear-view mirrors

Path of the train No. 83331

Regarding that the operation of the train is subject to rules different from the usual ones due to the special geographical situation of the railway line, the IC investigated the background of the operation of the train as well.

According to information from the representative of VPE Kft., the timetable of the train No. 83331 was made in a joint effort of several organisations.

The clients submitted their path requests for the Hungarian line section in the KAPELLA system, according to the normal domestic path request process, and the corresponding timetable was edited by VPE Kft.

The following data is available in connection with the timetable of the train No. 83331.

Path requested by:	*Zeleznica Spolocnost Cargo Slovakia a.s.*
Date of original request:	*17 October 2014*
Type of original request:	*Annual additional path (with timetable)*
Request accepted on	*1 November 2014*

The timetable was made final at international reconciliations and bilateral border transport reconciliations between the Hungarian and Slovakian parties.

The resulting final timetable was issued by each involved party to their respective personnel.

Service timetable

As regards headings, the service timetables applied in Slovakia and Hungary are partly different.

Due to differences in the traffic rules in the two countries, an important difference is that the Slovakian service timetable does not contain information relevant to the access direction (straight or diverging) in the case of stations not protected by interlocking which, has importance in the Hungarian network according to the Hungarian rules of traffic.

This difference is also the basis of the rule which says that, according to the Station Instructions, the crew of the trains running according to the schedule of transit traffic need not be notified of the alteration of access direction. This provision is left from those times when the freight trains and (earlier) the passenger trains transiting this line section carried Slovakian crews in the Hungarian section as well.

As the PSŽ a.s., as subcontractor of ŽSSK CARGO, employs locomotive drivers with licences valid for the Hungarian lines to drive the trains, and the Hungarian service timetable is delivered to the train, the regulation mentioned in the previous paragraph may be regarded as outdated.

The Station Instructions relevant to the managing of the traffic contains the following provision for the timetable of the trains:

> ***2.1*** *Transit trains moving on the Peage line shall be managed according to the timetable prepared in a joint effort by the railway companies interested. The transit trains shall not stop or reduce their speed below the specified lower limit while in the territory of Hungary, except when:*
> - *representatives of authorities so request,*
> - *it is unavoidable due to opposing trains, notification of train crews, or other traffic-related issue,*
> - *safe movement of the train is jeopardised,*
> - *it is so required by some technical or operation issue (e.g.: restricted-speed running, malfunction of the pneumatic brake, communication problem)*
> - *the train crew is ordered to do so (written instruction).*

According to the provisions of the Station Instructions based on the bilateral international agreement, the freight trains may only stop in the territory of Hungary in exceptional cases only.

Accordingly, the freight train should have been given a service timetable which contains no stop in the territory of Hungary.

Earlier, the service timetables contained no stay in Hungary for trains running in international traffic schedule; it was introduced when the trains began to stop both at Ipolytarnóc and Nógrádszakál stations to let the locomotive drivers with certificates in the knowledge of the Hungarian railway infrastructure and instructions get on and off.

In the opinion of the IC, the provisions in the Station Instructions have partly been outdated due to changes in the years past (accession of the affected countries to the EU; Schengen Agreement), which makes the necessity of the upholding the prohibition of stopping. Practice has developed in this direction in the meantime.

Access direction of the train No. 83331 at Nógrádszakál station

In connection with the entry relevant to the access direction at stations not protected by interlocking in the service timetable issued to the Hungarian crew, the IC received the information from the representative of VPE Kft. that VPE Kft. was currently editing a timetable at a lone level, but beyond that, the elaboration of railway station technologies is in the competence of MÁV Ltd. and GYSEV Ltd.

During the process of timetable editing, MÁV Ltd. and GYSEV Ltd. indicates which entry signals (straight, diverging, occupied, etc.) should be used for which trains at which stations, and the signals shall be set by VPE Kft. accordingly.

Modifications are certainly possible in the case of change in the traffic situation if the affected infrastructure manager informs VPE Kft. and the affected railway company on it.

Regardless of the fact that the traffic of international trains is subject to special rules as well, the railway traffic performed in the Hungarian railway network are subject to the Hungarian rules. This applies to the interpretation of the data contents given in the Service Timetable as well.

The crew of the train No. 83331 received the Hungarian service timetable at Ipolytarnóc station. The train was driven by a locomotive driver who has valid license for the Hungarian railway network, and understands the data contents of the service timetable delivered to him.

Taking a look at the service timetable of the train No. 83331, one can see that Column 3 (Entrance) is empty at the line for Nógrádszakál station, which means that the train must be allowed to access a station not protected by interlocking in straight direction. (The IC wishes to note here that, in the case of access in straight direction, the sign ● is missing from Column 2 [stations], which sign is indicated for those stations along a single-track or double-track line where straight access is followed by moving off in diverging direction, and the exit signal does not indicate the speed of moving off. Nógrádszakál Station is that kind of station from the aspect of the movement of the train.)

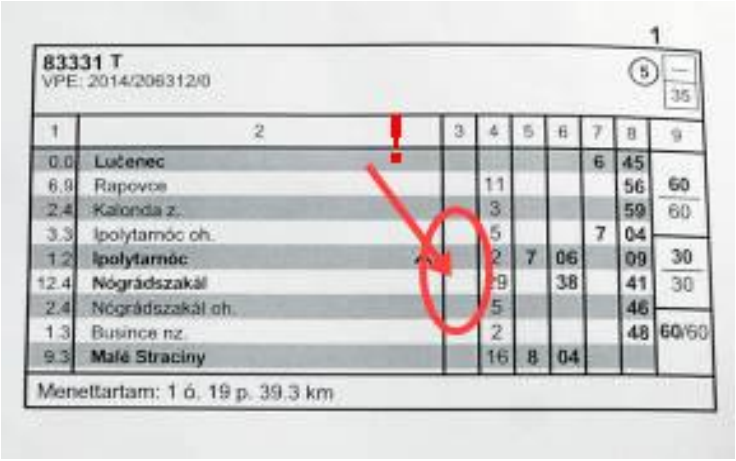


Figure 8: The Hungarian service timetable of the train No. 83331

The fact that the Station Instructions regulating international traffic provides that the train crew need not be notified of the alteration of the direction of access does not mean in itself that, a station not protected by interlocking, the station crew may interpret freely the service timetable made for the train and that they may modify at their own discretion the instruction relevant to the direction of access. It is questionable in itself whether it is allowed to divert from a cogent provision of the Train Loading and Running Regulations (which is subject to approval from the relevant authority) by issuing Station Instructions if the Train Loading and Running Regulations itself does not permit such diversion.

The affected station crew explained the access of the train No. 83331 with the specific local circumstances.

The switches No. 1 and 5 located at the down side of the station are operated by point wire while the switches at the up side are all operated locally. As a result, it is

significantly easier to set the path for the freight trains at the down side. (That is the reason why the switches were reconstructed to provide operation by wire in 1970.)

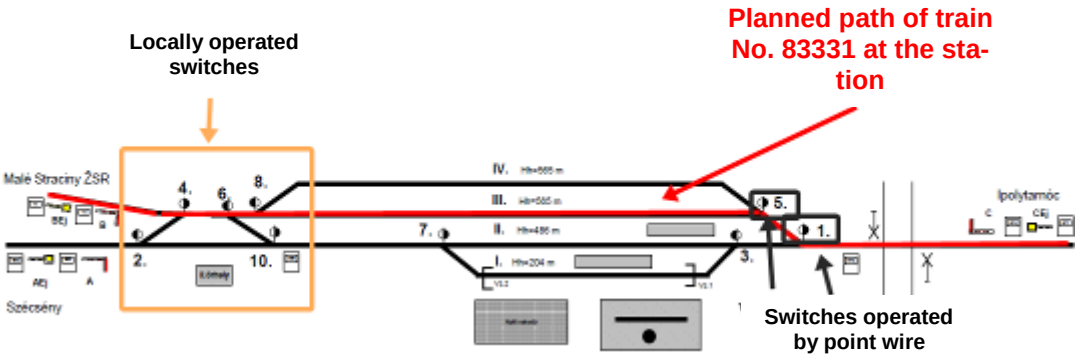


Figure 9: Switches operated locally or by point wire at Nógrádszakál station

This extra service (provided by switch operation by point wire) lies in the background of the decision that the train running towards Malé Straciny (Kishalom) was allowed to access in diverging direction instead of the straight direction specified in the timetable. According to the log-book of the station, this is procedure is regularly used at the station.

In connection with this, the IC notes that, with regard to the intensity of the traffic of this railways station, and to the traffic situation at the time of the occurrence, the fact that the train was not directed to the assigned track entailed no danger of accident in itself. However, the IC finds it important to mention this circumstance because it refers to a working practice which ignores the provisions of the framework system intended to regulate the managing of railway traffic.

The IC has no information relevant to any initiative taken by anybody to modify the service timetable of the train No. 83331 in order to alter the direction of access of the train in the timetable, adjusting it to the existing practice.

The Hungarian driver of the train No. 83331

The train No. 83331 is driven by the locomotive driver of ŽSSK CARGO from its starting point to Ipolytarnóc station, and again from Nógrádszakál station to its terminal station.

ŽSSK CARGO a.s. signed a contract with PSŽ a.s. for the moving of freight trains in the Hungarian section. Subject to the contract, PSŽ a.s. provides locomotive drivers compliant with the Hungarian requirements (knowledge of the line and the instructions, and medical fitness) for the section between Ipolytarnóc and Nógrádszakál.

It was found during the investigation that the locomotive driver does not speak Slovakian, and did not have the license “Station Instructions for traffic management on the Malé Straciny/Nógrádszakál – Ipolytarnóc /Lucenec shared (peage) railway line used by MÁV Ltd. and ŽSSK CARGO a.s.” at the time of the occurrence.

The trains moving between Losonc and Kishalom (Malé Straciny) all stop at Ipolytarnóc and Nógrádszakál station to let the locomotive drivers get off and on. The locomotive driver of PSŽ a.s. takes over the driving of the train from the locomotive driver of ŽSSK CARGO a. s. The driver signs the tape in the speed indicator on the locomotive to confirm the fact of changing of the drivers. The same procedure is applied when the locomotive driver returns control of the locomotive.

The locomotive driver stated to the IC that he had received the Hungarian service timetable of the train at Ipolytarnóc station, and according to that, the direction of access of the train was straight at Nógrádszakál station.

When accessing the station, the locomotive driver did not stop the train despite the fact that he detected the turnout position of the switch No. 1, but he moved the train on to track No. III.

In order to avoid a long walk back from the other end of the station (the location for stopping specified in the Train Loading and Running Regulations), he stopped the train at a different location: 20 m of the passenger building in such manner that the tail of the train stopped outside the entry signal.

Supervisory activity

From traffic management aspect, Nógrádszakál station reports to Szécsény Station Management which in turn reports to Balassagyarmat Junction Management.

After the occurrence, the IC initiated a meeting in order to clarify the requirements relevant to the traffic of the freight trains running in transit traffic. At that meeting, the IC received the information that the supervision and possible modification of the Station Instructions are the responsibility of the top management of the company.

In the opinion of the IC, some of the instructions relevant to the traffic of the freight trains running in transit traffic have got outdated, and differ from the current practice, but no modification has been initiated.

Based on the data available, the IC concluded that the supervision of the traffic of trains was not performed with due thoroughness.

The supervisory staff tolerated a station practice which is handy but conflicts with the railway instructions in effect. In the opinion of the IC, it also contributed to the fact that the crew participating in performing and managing traffic disregarded other rules as well during their decisions and actions (e.g.: operating the signal and the switch without authorisation, selecting the location of stopping the train, and tolerating of such actions) on the day of the accident, thus contributing actively to the its occurring.

3. CONCLUSIONS

3.1 Factual statements directly connected to the occurrence of the accident

In the opinion of the IC, the occurrence may be attributed to human factors, as the switch No. 1 of Nógrádszakál station was set to straight direction position before the train No. 83331 left it, and without an authorisation given to the pointsman, and as a result of that, the bogies of the last but one wagon in the train set ran on different tracks, and the wagons derailed.

3.2 Factual statements indirectly connected to the occurrence of the accident

The train No. 83331 was allowed to access in diverging direction instead of the straight direction specified in the service timetable given to the station.

The train No. 83331 accessing Nógrádszakál station failed to stop in front of the switch No 1 which was set inappropriately (in diverging direction) for it.

The train stopping at Nógrádszakál station to change crew stopped at another location than that specified in the instructions, and due to that, the tail of the train was left outside the entry signal of the station.

3.3 Other risk factors

Some of the provisions in “Station Instructions for traffic management on the Malé Straciny/Nógrádszakál – Ipolytarnóc /Lucenec shared (peage) railway line used by MÁV Ltd. and ŽSSK CARGO a.s.” have become outdated, have not been adapted to changes, and due to that, daily practice has developed procedures differing from those provisions.

4. SAFETY RECOMMENDATION

Having reviewed the circumstances of the occurrence investigated, the TSB issues the following safety recommendation.

BA2015-0320-5-01: *Some of the provisions in "Station Instructions for traffic management on the Malé Straciny/Nógrádszakál – Ipolytarnóc/Lucenec shared (peage) railway line used by MÁV Ltd. and ŽSSK CARGO a.s." intended to regulate the managing of the traffic of trains have become outdated, have not been adapted to changes with time, and due to that, daily practice has developed procedures differing from those provisions.*

The TSB of Hungary recommends the Hungarian Transport Authority to review the harmony between "Station Instructions for traffic management on the Malé Straciny/Nógrádszakál – Ipolytarnóc/Lucenec shared (peage) railway line used by MÁV Ltd. and ŽSSK CARGO a.s." and the F.2. Train Loading and Running Regulations in effect in Hungary, and to call MÁV Ltd. to upgrade the Station Instructions.

According to the position of the TSB the implementation of this recommendation would contribute to making the rules of the traffic management of the international freight trains transparent easy to comply with and to interpret uniformly for all of the parties concerned.

Budapest, 9th February 2016

Róbert Karosi
Investigator-in-Charge

Péter Demjén
IC Member