



MINISTRY OF TRANSPORTS AND INFRASTRUCTURE
ROMANIAN RAILWAY AUTHORITY - AFER

ROMANIAN RAILWAY INVESTIGATING BODY



INVESTIGATING REPORT
of the railway accident happened in the railway station Curtici,
on the 11th of August 2010



Final edition
17.12.2010

NOTICE

With reference to the railway accident occurred on the **11th of August 2010**, around **9:02 hour**, in the **Branch of the Railway County Timisoara**, running section Arad – Curtici, in the railway station Curtici, at the passing over the double slip points (TDJ) 19/23 of the freight train no. 39915, by **its collision with the locomotive EA 40 0167-3**, followed by the derailment of all axles of the locomotive EA 91-53-0-478-001-7, hauling the train no. 39915, Romanian Railway Investigating Body carried out an investigation, according to the provisions of the Regulations for the investigation of the accidents and incidents, for the development and improvement of the railway safety on Romanian railways and subway, approved by the Government Decision no. 117/2010. Through the investigation, the information on the respective accident was gathered and analyzed, the conditions were established and the causes determined.

Romanian Railway Investigating Body investigation did not aim to establish the guilty or the responsibility in this situation.

Romanian Railway Investigating Body considers necessary to take corrective measures in order to improve the railway safety and to prevent the accidents, in this respect it included in the report a series of safety recommendations.

Bucharest, the 17th of December 2010

Approved by,
Dragos Floroiu
director

I agree the compliance with
the legal provisions on the investigation
performance and drawing up of this
Investigation Report, that
I submit for approval

Chief Investigator
Sorin Constantinescu

This approval is part of the Report for the investigation of the accident occurred on the 11th of August 2010, around 9:02 hour, in the Branch of the Railway County Timisoara, running section Arad – Curtici, in the railway station Curtici, at the passing over the double slip points (TDJ) 19/23 of the freight train no. 39915, by its collision with the locomotive EA 40 0167-3, followed by the derailment of all axles of the locomotive EA 91-53-0-478-001-7, hauling the train no. 39915.

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PREAMBLE

1.1 Introduction

Concerning the railway accident happened on the **11th of August 2010, around 9:02 hour, in the Branch of the Railway County Timisoara**, running section Arad – Curtici, in the railway station Curtici, at the passing over the double slip points (TDJ) 19/23 of the freight train no. 39915, by **its collision with the locomotive EA 40 0167-3**, followed by the derailment of all axles of the locomotive EA 91-53-0-478-001-7, hauling the train no. 39915, Romanian Railway Investigating Body, hereinafter referred as OIFR, started an investigation, in order to prevent some accidents with similar causes, establishing the conditions and causes and issuing some safety recommendations.

Romanian Railway Investigating Body investigation did not aim to establish the guilty or the responsibility, its objective being to improve the railway safety and to prevent the railway incidents and accidents

1.2 Investigation

On the 11th of August 2010, OIFR was notified by Romanian Railway Safety Authority about the railway accident happened in the Branch of the Railway County Timisoara. At the accident place went specialists of Romanian Railway Investigating Body and found out that in the railway station Curtici, at the passing over TDJ 19/23 of the freight train no. 39915, **happened the collision with the locomotive EA 40 0167-3**, followed by the derailment of all axles of the locomotive EA 91-53-0-478-001-7, hauling the train no. 39915.

The freight train no. 39915, belonging to the railway undertaking **SC Logistic Services Danubius SRL** and the locomotive EA 40 167-3 involved in the accident, belonging to the railway undertaking **Train Hungary Maganvasu Ipari Kereskedelmi es Szolgaltato Ltd**, hereinafter referred as **Train Hungary**.

The railway undertaking SC Logistic Service Danubius SRL is licensed and has valid safety certificate (parts A and B), granted by Romanian Railway Authority – AFER. The railway undertaking Train Hungary has the railway transport license no.HU 11 2007 00005 granted by the conversant Hungary authority and safety certificate (parts A and B), identification European number KU/VHF/254-9/2007 granted by the Hungarian transport authority, according to the applicable European legislation.

At the accident place went specialists of Romanian Railway Safety Authority, as well as representatives of the public railway infrastructure administrator, including from SC Interventii Feroviare SA and from the involved railway undertakings, that is from SC Logistic Service Danubius SRL and Train Hungary.

The collision of the freight train no. 39915 with the locomotive EA 40 167-3 is included in the art 7, paragraph (1), letter a) of the Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway safety, approved by Government Decision no. 117/2010, and according to the registered consequences the occurred deed is defined in accordance with the art. 7, paragraph (2), letter b) of the same legal paper.

Taking into account the above mentioned things, according to the art. 19, paragraph (2) of the Law 55/2006 on the railway safety, corroborated with the art. 48, paragraph (1) of the Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway safety, approved by Government Decision no. 117/2006, Romanian Railway Investigating Body appointed an investigation commission for the gathering and analyzing of the technical information, for the establishment of the conditions, including the causes and, if case, issuing of some safety recommendations in order to prevent some similar accidents and to improve the railway safety.

So, through the Decision of OIFR director, no. 29 from the 16th of August 2010, was appointed the investigation commission, consisting in:

- Constantinescu Sorin - investigator in charge

- Olaru Mihai - investigator
- Burlea Sorin - investigator
- Drăghici Marin - investigator
- Păiș Luca - investigator
- Oltenacu Livius - investigator

According to the national legal provisions and to European applicable legislation, one sent to the similar institution from Hungary, that is **Közlekedésbiztonsági Szervezet** – Transports Safety Department, a report on this accident occurrence and the invitation to appoint a representative that participate in the investigation, taking into account that in the accident was involved a railway undertaking licensed in this country, and it happened in the common border railway station Curtici.

The need, to analyze and to discuss the accident in a common framework with the representatives of all involved parties, results from the Railway Safety Directive 2004/49/EC of European Parliament and Council, in force at this moment, transposed into the national legislation by the Law no. 55/2006 on the railway safety, with the further amendments, that stipulates at the art. 22 (1) that "the investigation bodies from another member state are invited to participate in an investigation, whenever a railway undertaking set up and licensed in that member state is involved in the accident or incident".

As response to the invitation of OIFR, Hungarian Transports Safety Department participated in the investigation, accepting the causes (direct, undelying and root causes) as well as the issued recommendations.

A. Brief presentation of the accident

A.1 Brief presentation

On the 11th of August 2010, around 9:02 hour, in the **Branch of the Railway County Timisoara**, running section Arad – Curtici, in the railway station Curtici, at the passing over the double slip points (TDJ) 19/23 of the freight train no. 39915, by **its collision with the locomotive EA 40 0167-3**, followed by the derailment of all axles of the locomotive EA 91-53-0-478-001-7, hauling the train no. 39915.



The freight train no. 39915, belonging to the railway undertaking **SC Logistic Services Danubius SRL**, consisted in 26 loaded wagons, 104 axles, 1979 gross tonnage, length 414 m was hauled by the locomotive EA 91-53-0-478-001-7. The freight train no. 39915 had in its forming also the locomotive EA 40-0888-4, belonging to Transferoviar Grup SA, being hauled after the train locomotive. The railway undertaking SC Logistic Service Danubius SRL is licensed and has valid safety certificate (parts A and B), granted by Romanian Railway Authority – AFER.

The locomotive EA 40 0167-3 involved in the accident belongs to the railway undertaking **Train Hungary Maganvasu Ipari Keresekedelmi es Szolgaltato Ltd**, hereinafter referred as Train Hungary. The railway undertaking Train Hungary has the railway transport license no. HU 11 2007 00005 granted by the competent Hungarian authority and safety certificate (parts A and B), with identification European number KU/VHF/254-9/2007 granted by the Hungarian transport authority, according to the applicable European legislation.

Following the railway accident there were no victims (deaths or injured persons)

In order to re-rail the derailed locomotive there was necessary the intervention of the specialised breakdown train from the railway station Brasov. The derailed locomotive was re-railed on the 12th of August 2010, at around 15:00 hour, without any other consequences.

The railway traffic between the railway stations Arad and Curtici was closed on the 11th of August 2010, between the hours 9:02 and 11:13, on the running line Arad – Curtici and between the hours 9:02 and 11:57 on the running line II Arad – Curtici.

A.2 Direct cause, underlying cause and root causes

A.2.1 Direct cause

The direct cause of the accident is the passing of the shunting signal M 7A, with the position „STOP without passing the signal in the shunting”, without the meeting with the provisions of the specific regulations by the locomotive EA 40 0167-3, followed by the collision with the freight train no. 39915, that entered the station on the line 11A.

The passing of the shunting signal M 7A with the position „STOP without passing the signal in the shunting”, by the locomotive EA 40 167-3 without the meeting with the provisions of the specific regulations, is due to a human mistake.

A.2.2 Underlying cause

Lack of communication between the movements inspector from the railway station Curtici and the driver, because the locomotive EA 40 0167-3 had no radio station set on the shunting frequency of the railway station Curtici and the driver of the railway undertaking Train

Hungary did not speak Romanian, according to the art. 5, paragraph (1) from the „Agreement” between Romanian and Hungarian Governments concerning the railway traffic on the border, concluded on the 12th of March 1997.

A.2.3 Root causes

The regulation framework between the railways CFR and MAV is not in accordance with the provisions of the national legislation and community directives in force.

Lack of the safety certification part B, granted by Romanian Railway Safety Authority, that certifies that the railway undertaking Train Hungary complies with the specific requirements necessary for a safety operation of the railway network where it carries out the activity, that is Romanian railways.

A.3 Severity level

According to its consequences, the deed is defined as accident according to the art. 7, paragraph (2), letter a) of the Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway network, approved by Government Decision 117/2010.

A.4. Safety recommendations

1. To meet the specific requirements necessary for safe operation, the access to the railway networks corresponding to cross-border services for licensed railway transport operators in one of the EU Member States other than Romania will be performed only in the basis of the safety certificate part B issued by the Romanian Railway Safety Authority.
2. To meet the requirements related to professional and linguistic knowledge specific to the Romanian railway infrastructure, the engine driver of one licensed railway transport operator in one of the EU Member States other than Romania will be certified in accordance with the current legislation.

This investigation report will be sent to the public railway infrastructure administrator (CNCF „CFR” SA), to the involved railway undertakings (SC Logistic Services Danubius SRL and Train Hungary), to Romanian Railway Safety Authority and Hungarian Transport Safety Department.

According to the provisions of the Law no. 55/2006 on the railway safety, Romanian Railway Safety Authority will monitor the implementation of these recommendations in Romania.

The Transport Safety Office in Republic of Hungary will take the necessary steps in Hungary to implement these recommendations.

B. INVESTIGATING REPORT

B.1 Accident presentation

On the 11th August 2010, at 3:20 hour, the freight train no. 39915 was dispatched from the railway station Mintia to the railway station Curtici. The train run on this distance safely up to the entrance into the railway station Curtici where stopped in front of the station entry signal. After a stop of 5 minutes, according to the open position of the entry signal (with entry route on the line no. 11 A), the train started to run and entered the station from the line I Arad – Curtici to the line 11A. After about 369 m, at passing over TDJ 19/23 happened the collision of the freight train no. 39915 with the locomotive EA 40 0167-3, running from the shunting neck no. 7A, after passing the shunting signal M 7A in the stop position. The collision happened at a running speed of the freight train no. 39915 of 24 km/h and a running speed of the light engine EA 40 0167-3 of 7 km/h.

Accident place

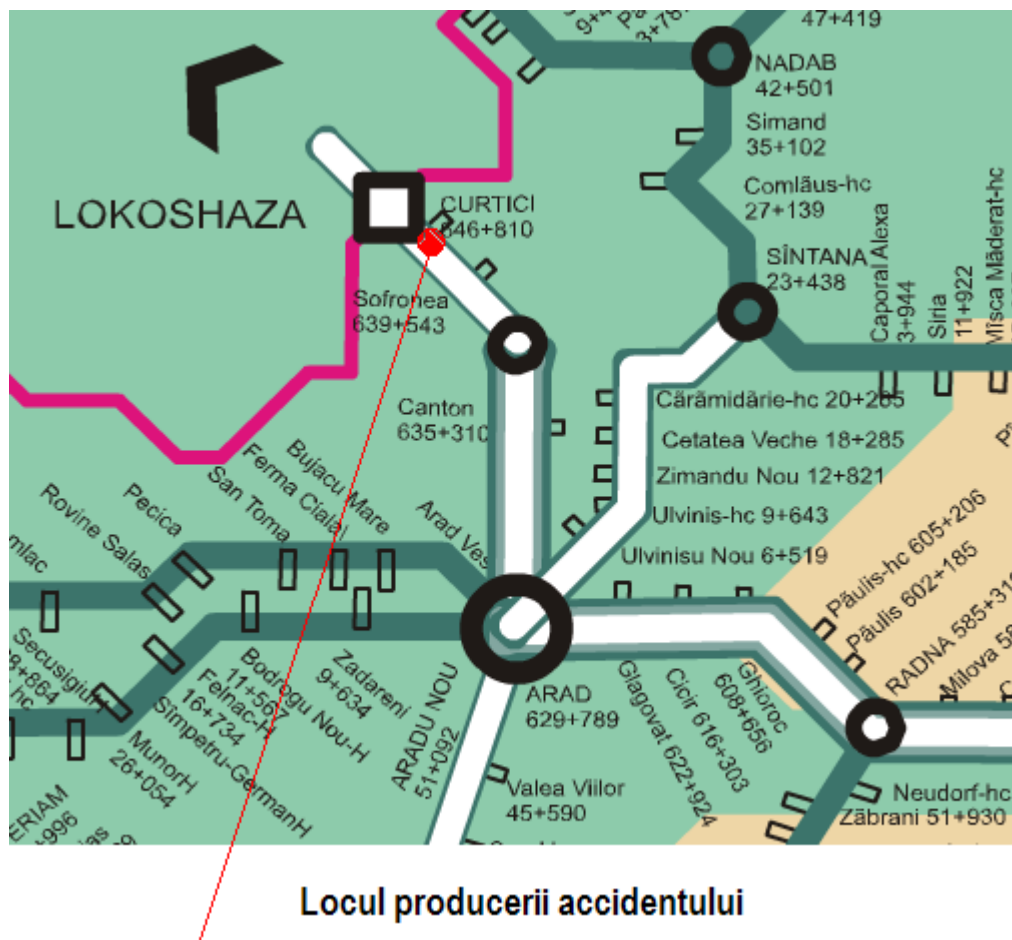


Photo 1 – Geographical place of the accident

The locomotive EA 40 0167-3 of the railway undertaking Train Hungary arrived in the railway station Curtici, as train no. 382- light engine, on the 11th of August 2010, at 00:35 hour and stabled on the line 3, where stopped up to 7:58 hour, when it was shunted from the line no. 5A on the shunting neck no. 7A. At 9:00 hour the driver changed the running direction from the shunting neck 7A to the shunting signal no. M 7A. After running about 11 m with a speed of 3 km/h maximum, the locomotive was stopped about 17 seconds, then started to run again and after about 27 m (passing the shunting signal no. M 7A in stop position), at a speed of about 7 km/h, happened the collision with the freight train no. 39915.

At the accident place the situation was as follows:



- the locomotive EA 91-53-0-478-001-7, hauling the train 39915 with all axles derailed, reclined on the right side in the running direction;

- the track damaged on about 25 m.

One found out the next:

- the control seals from the command device of the electro-dynamic equipment of the railway station Curtici were intact, without interventions on them;
- all switches from the end X of the railway station Curtici were found out on the track diagram of the electro –dynamic equipment of the railway station Curtici;
- the track section from the end X of the railway station Curtici were observed opened on the track diagram of the electro –dynamic equipment of the railway station Curtici, excepting the entry route for the freight train no. 39915 from the signal X of the line no. 11A that was closed.

B.2 Accident circumstances

B.2.1 Involved parties

The running section where happened the railway accident is administrated by CNCF „CFR” SA and maintained by its employees.

The force and traction equipment (IFTE) is administrated by CNCF „CFR” SA and maintained by the employees SC ELECTRIFICARE CFR SA – Timisoara county.

The locomotive and the wagons of the freight train no. 39915, involved in the railway accident are owned by SC Logistic Services Danubius SRL and maintained and inspected during the route by its employees, the repairs are made by economic companies authorized as railway suppliers. The freight train no. 39915 had in its forming also the cold locomotive EA 40-0888-4, belonging to SC Transferoviar Grup SA, added after the hauling locomotive.

The locomotive EA 40 0167-3 involved in the accident belongs to the railway undertaking **Train Hungary Maganvasu Ipari Keresekedelmi es Szolgaltato Ltd.**

The investigation commission questioned the employees involved in the accident, that is the drivers and the movements inspector on duty in the railway station Curtici.

B.2.2 Train forming and equipments

The freight train no. 39915, hauled by the locomotive EA 91-53-0-478-001-7, belonging to the railway undertaking **SC Logistic Services Danubius SRL**, consisting in 26 wagons loaded with salt, 104 axles, 1979 gross tonnage, 1381 nett tonnage, 414 m length, run between Mintia and Curtici.

The safety and vigilance equipments (DSV), the equipment for the punctual control and autostop (INDUSI) of the hauling locomotive EA 91-53-0-478-001-7 belonging to the railway undertaking **SC Logistic Services Danubius SRL** were in service and operated according to the instructions and with the handbrake in service.

The locomotive EA 40 0167-3, belonging to the railway undertaking **Train Hungary Maganvasu Ipari Kereskedelmi es Szolgaltato Ltd**, **had not the radio station set on the shunting frequency of the railway station Curtici.**

B.2.3 Railway equipments

The railway station Curtici is endowed with electro-dynamic interlocking system type CR3, normally functioning.

INDUSI equipment fitted on the track operated normally (it resulted from the analysis of the records of the speed indication and record device with permanent memory from the locomotive EA 91-53-0-478-001-7, hauling the freight train no. 39915).

The fixed radio station from the movement inspector office operated normally.

B.2.4 Means of communications

The communication between the driver of the freight train no. 39915 and the movement inspector of the railway station Curtici was ensured by radio station.

The communication between the driver of the locomotive EA 40 0167-3 and the movement inspector from the railway station Curtici could not be done by the radio station because the locomotive EA 40 0167-3 had not the radio station set on the shunting frequency of the railway station Curtici.

The communication between the movement inspector from the railway station Curtici and the driver of the locomotive EA 40 0167-3 was made through the commercial representative of the railway undertaking Train Hungary, residing in the railway station Curtici, that informed him that the train would be shunted according to the light positions of the shunting light signals.

B.2.5 Start of the railway emergency plan

Soon after the railway incident, there was necessary to start the intervention plan in order to remove the damages and to re-start the trains traffic, the railway accident being notified through the information flow stipulated in the *Regulations for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway safety*, approved by Government Decision 117/2010.

Following the notification, at the accident place came the representatives of CNCF „CFR” SA – railway infrastructure administrator, including those of SC Interventii Feroviare SA, of the involved railway undertakings, that is Logistic Services Danubius SRL and Train Hungary, of Romanian Railway Safety Authority and of Romanian Railway Investigating Body. SC Interventii Feroviare SA re-started the traffic.

B.3 Accident consequences

B.3.1 Losses and casualties

None

B.3.2 Material damages

The value of the material damages, according to the estimations drawn up by the owner of the rolling stock, intervention equipments and public railway infrastructure administrator, is:

- **at the locomotive EA 91-53-0-478-001-7, according the estimation SC SOFTRONIC SRL Craiova = 214042,41 lei, without VAT;**

- **the tariff for the use of the sequence of operations with hydraulic jacks** according to the estimation of Track Division Brasov no. 230/1/150/2010 = **78249,88 lei without VAT**;
- **tariff for the hauling of the sequence of operations with hydraulic jacks**, according to the estimation of the Engine Shed Brasov = **4402,97 EUR without VAT**;
- **the tariff for the infrastructure use (TUI)**, calculated/tren km = **8905,4 EUR without VAT**;
- **at the lines** according to the estimation of the Track Section L8 Arad no. 3038/2010=**14567,31 lei with VAT**;
- **trains delays**, according to the estimation of Traffic Controller Arad no. 674/2010=**967,14 lei with VAT**
- **at the environment** – none.

B.3.3 Accident consequences for the railway traffic

The traffic between the railway stations Arad and Curtici was closed on the 11th of August, between the hours 09:02 and 11:13, on the line I Arad – Curtici and between the hours 09:02 and 11:57 on the line II Arad-Curtici.

Because of it 3 passenger trains had delays of 397 minutes totally:

- train no. 378-1 with 86 minutes;
- train no. 7310 with 178 minutes;
- train no. 2206 with 133 minutes.

B.4 External circumstances

On the 11th of August 2010, in the railway station Curtici, around 9 o'clock, the visibility was very good, the air temperature was about 24⁰C, cloudless sky.

At the accident place the line was without gradient and left curve.

The visibility of the light signals was in accordance with the specific regulations in force.

B.5 Investigation

B.5.1 Summary of the involved staff testimonies

From the statement of **the driver** on duty of the **locomotive EA 40 0167-3** on the 11th of August 2010, one can pay attention to:

- he arrived in the railway station Curtici on the 10th of August 2010, at 23:00 hour, with the train no. 7382;
- on the 11th of August 2010, at 7:40 hour, he was notified by word of mouth, by the representative of Train Hungary about the next train shunting in order to start his activity;
- he changed the cabin and run according to the shunting light signal up to the shunting neck, beyond the shunting dwarf signal M 7A;
- then he changed the cabin, run with the locomotive nearer the signal, left the locomotive and then run towards the railway station;
- he stopped at the blue position of the next shunting signal;
- he observed that the switch was on open position to the marshalling yard;
- he did not know the line where he was to enter the marshalling yard and he knew that he had to take into account only the indication of the shunting signal;
- he was trained on the shunting signal positions and he knows also the position of the lights on the shunting signal;
- he has been carrying out his job in the railway station Curtici since 1 year;
- he was trained from the practical point of view with other drivers in the railway station Curtici;

- he was trained from the “Instructions for the train running between the border railway stations Curtici and Lokoshaza”, 2 – 3 days in Debrecin;
- he has no point of view that the existed self-evident material proves were not in accord with his statement and considered that in order to carry out correctly the activity it should be necessary quality light signals, the existed material proves were not enough, because they could not prove that the switch were on right position, because the field situation changed.

From the statement of **the driver of the freight train no. 39915** from **the 11th of August 2010**, one can pay attention to:

- he hauled the freight train no. 39915 on the 11th of August 2010 from the railway station Mintia to the railway station Curtici;
- the caution signal PrX from the railway station Curtici was on yellow position and the entry signal X was on red position;
- he stopped in front of the entry signal X at 8:55 hour and left at 8:59 hour with the entry signal position “two yellow lights”;
- he saw that the route was on deflecting section;
- after passing over the first switch on deflecting section, he observed that also the second switch was on deflecting section and he observed too that a locomotive run with low speed in front of the train, entering in the structure clearance;
- he braked soon but because the big tonnage (2000 t) collided that locomotive, and it derailed.

From the statement of **the movements inspector** on duty in **the railway station Curtici** on **the 11th of August 2010**, one can pay attention to:

- at the start of the job, on the line 5A cabin 3 was the locomotive EA 40 167-3 of the railway undertaking Train Hungary;
- on 8:58 hour he run the shunting route from the line 5A for the locomotive leaving and notified the drivers of the locomotive EA 40 167-3, by the representative of Train Hungary (Hungarian speaker) through the words “follow the signals and you will go on the train”;
- the locomotive EA 40 167-3 left the line 5A up to the shunting neck, after M7A;
- because there was necessary a time that the representative contact the drivers, the freight train no. 39915 was at the entry signal;
- after the ending of the route by the locomotive EA 40 167-3, there was performed the entry route of the train no. 39915 on the line 11 A;
- in the locomotive EA 40 167-3 there were 2 drivers and in the locomotive there was no radio station set on the frequency of Curtici railway station;
- MMV is the only railway undertaking endowed with mobile phone in the locomotive from which one can call the direct line between the railway stations Curtici and Lokoshaza;
- he heard bustle outside, opened the window and found out that the freight train no. 39915 collided the locomotive EA 40 167-3;
- he notified the station manager and traffic controller operator about the collision;
- the verbal shunting schedule notification by the movements inspector from the railway station Curtici of the drivers of the railway undertakings that do not speak Romanian is made by the representative of the railway station undertaking (if it exist) or by the movements inspector of MAV Cargo, residing in Curtici railway station that helps them every time, although he has no legal obligation;
- there was no problem in the operation of electro-dynamic equipment, the entry route of the freight train no. 39915 was performed with the electro-dynamic equipment in

normal condition, the shunting route was performed with the electro-dynamic equipment in normal condition and the control seals were intact.

From the statement of the **trainer** of the railway undertaking **Train Hungary Maganvasu Ipari Kereskedelmi es Szolgaltato Ltd**, one can pay attention to:

- the drivers are trained from the provisions of the signalling and movement instructions existing for Romanian railways that are different from those existing for Hungarian railways and they are extracted from a book.

From the statement of the **driver that ended its service on the locomotive EA 40 0167-3 on the 11th of August 2010**, one can pay attention to:

- he arrived in the railway station on the 10th of August 2010, 23:00 hour with the train no. 7382;
- from the arrival hour up to the collision hour he rested in the locomotive in the point to Lokoshaza;
- he was woken up by the representative of Train Hungary, then he continued his rest;
- after the locomotive stop on the shunting neck he woke up, replaced the seats back and rested in the cabin to Lokoshaza;
- from the driving cab he could not see the position of the shunting signal M7A;
- he saw the driver mate getting off the locomotive and knew that he got off in order to see the position of the shunting signal M7A;
- the shunting signal position could not be surely seen from the locomotive, it was seen obscurely, one could not see any position;
- he could not see the next shunting signal, it was not in its visual range;
- the switch 19A/23A gave access to the marshalling yard correctly;
- being out of duty he had not to receive information and did not speak with anyone.

B.5.2 Safety management system

During the common investigation there was identified an ambiguity on the regulation framework applied to the cross-border traffic, as follows:

- the trains traffic between the railway stations Curtici and Lokoshaza is made according to the common working Instructions that stipulate at the chapter I, point 7 “Romanian and Hungarian railway undertakings can hauled trains on the other part network complying with the railway regulations, legislation in force and on the basis of the agreement of Romanian and Hungarian railway infrastructure administrator, that is CFR and MAV;
- the working instructions concerning the railway traffic in the border railway stations Curtici and Lokoshaza stipulate at the point 6: *„The services concerning the dispatching/reception of the freight and passenger trains are performed together by the staff of Romanian and Hungarian railway undertakings, in the railway station established by these that haul the train. The dispatching/reception railway station is established by bilateral agreements between Romanian and Hungarian railway undertakings, approved by the two infrastructure administrators (CFR and MAV). The dispatching/reception railway station is, generally, the border railway station Curtici”*;
- one found out that the two infrastructure administrators concluded a common agreement in force, allowing the access in the common border railway stations to all railway undertakings, but for no railway undertaking licensed in Hungary there is the agreement of the infrastructure administrator CNCF „CFR” SA;

- the above mentioned working instructions were established in 2007, before the Minister of Transports Order no. 535 from the 26th of June 2007 concerning the approval of the Norms for the granting of the railway transport licences and safety certificates for the performance of railway transports on Romanian railways, ***are limited and do not stipulate that the railway undertaking has to get safety certificate part B;***
- according to the Minister of Transports Order no. 535 from the 26th of June 2007, chapter II, art 17, paragraph (3) : „*The railway undertakings, licensed by the authorities in charge with the granting of the licences to the railway undertakings from the other member states of EU, having safety certificates part A and have the intention to perform on Romanian railways a synonym railway service, has to get obligatorily a safety certificate part B, received in accordance with the provisions of this order, from Romanian Railway Safety Authority*”;
- The railway undertaking Train Hungary has no safety certificate part B ***granted by Romanian Railway Safety Authority*** in order to confirm „*acceptance of the provisions adopted by the railway undertaking for the compliance with the specific requirements necessary for the safety operation of the railway network on which he carries out its activity: some track sections of Romanian railways or fully, railway stations, shunting areas, industrial branches*” – according to the art. 14, point b) from the Minister of Transports Order no. 535 from the 26th of June 2007, it running in the railway station Curtici only on the basis of the valid safety certificate part B, granted by Hungarian Safety Authority and in accordance with the bilateral agreement CFR – MAV;
- the railway undertaking Train Hungary **does not perform in the railway station Curtici only shunting services** (that is there is not necessary its licensing as shunting underting). We underline that concerning the railway undertaking Train Hungary, licensed in Hungary, **one did not found** in the records of Romanian and Hungarian safety **authorities the documents from which result** that the track section between the border and the railway station Curtici (inclusively) **is ruled by a safety certificate;**
- the common working instructions CFR – MAV do not stipulated the testing of Hungarian driver of the locomotive hauling the train in/from the railway station Curtici, concerning the knwoledge on the working/signalling in the railway station Curtici or the communication language, these being stipulated in the Directive 2007/59/EC on the certification of the drivers in the railway community area. Also, for the performance of the one driver service in the railway station Curtici it is compulsory that the radio station from the locomotive be set on the local frequency.

Taking into account the above mentions , the both investigation bodies consider that the present safety certificate part B of the railway undertaking Train Hungary, granted by Hungarian transport authority, does not prove that Hungarian undertaking can meet with Romanian railway safety standards and norms (from the railway station Curtici).

B.5.3 Norms and regulations. Sources and references for the investigation

In the investigation of the railway accident one took into account :

- the photos captured soon after the accident by the members of the investigation commission;
- the documents on the management and regulation of the train running;
- the minute for the finding of the operation of the electro-dynamic equipment in the railway station Curtici;

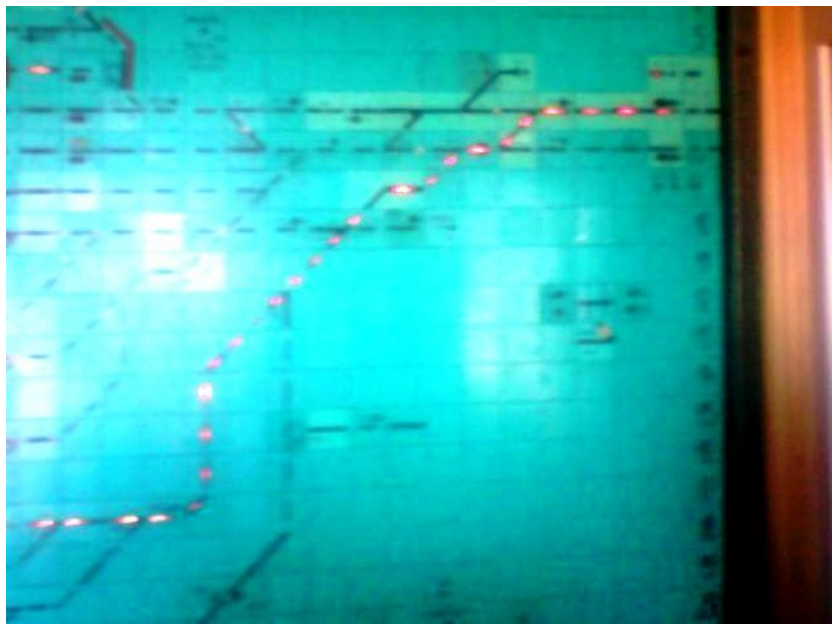
- questioning of the involved employees;
- signalling regulations no. 004/2006;
- instructions for the activity of the locomotive staff no. 201/2007;
- order 17D/610 column 1987 „Instructions on the operation, attending and maintenance of the safety and vigilance devices and of the equipments for the punctual control of the speed (INDUSI)”.

B.5.4 Operation of the technical equipments, infrastructure and rolling stock

B.5.4.1 Data found out on the equipments

The order device of the interlocking system type CR 3 from the railway station Curtici:

- locked running route made from the entry signal X from the line I Arad – Curtici to the line 11A;



- all the seals from the order desk of the movements office intact;
- the key and the door of the relays hall with the seals intact;

The positions of the shunting ground signal M7A had the visibility according to the instructions in force.

B.5.4.2 Data found out on the lines

The line has the superstructure with rail type 49, wooden sleepers and concrete T17, indirect fastening type K.

Double slip-points TDJ 19A/23A has the radius $R=190$ m, tangent 1/9 and rail type 49.

B.5.4.3 Data found out on the operation of the rolling stock and its technical equipment.

The locomotive of the freight train no. 39915; EA 91-53-0-478-001-7:

- | | |
|---------------------------------------|-------|
| • the condition of the air brake | good; |
| • the condition of the hand brake | good; |
| • the condition of the air compressor | good; |
| • the condition of the air gauges | good; |

- the condition of the safety and vigilance equipment good and sealed;
- the condition of the equipment for the punctual control of the speed good and sealed;
- the condition of the equipment IVMS – Softronic good and sealed;
- the condition of the radio station good.

The locomotive EA 40 0167-3:

- the condition of the air brake good;
- the condition of the hand brake good;
- the condition of the air compressor good;
- the condition of the air gauges good;
- the condition of the equipment IVMS – Softronic good and sealed;
- the condition of the radio station it is not set on the frequency of the railway station Curtici.

From the **minute** for the reading of the records of IVMS equipment from the locomotive **EA 91-53-0-478-001-7** of the freight train no. **39915**, from the 11th of August 2010 resulted:

- on the 11th of August 2010, at 08:51:57 hour, the freight train no. 39915 passed the warning signal end X (Pr. X) from the line I of the railway station Curtici with 46 km/h, one recorded influence of 1000 Hz, the driver pushing the button of INDUSI equipment „Attention INDUSI”;
- after 1381 m, at 13 km/h speed, is recorded an influence of 500 Kz, the locomotive running 36 m and stopping at 8:54:35 hour in front of the entry signal X from the line I of the railway station Curtici;
- at 8:54:48 the locomotive started to run, making 172 m, and then at 8:59:22 is recorded an influence of 1000 Hz (at the entry signal), the driver pushing the button of INDUSI equipment „Attention INDUSI”, then the speed increased up to the maximum speed of 24 km/h at 9:00:42 hour, making 369 m, after that the speed decreasing at 0 km/h in 43 m at 9:00:56 hour;
- INDUSI equipment operated;
- there were no slipping or brakes of the locomotive .

From the **minute** for the reading of the records of IVMS equipment from the locomotive **EA 40 0167-3**, from the 11th of August 2010 resulted:

- on the 10th of August 2010, at 23:41:42 hour (00:41:41 Romanian time) the locomotive arrived in the railway station Curtici and stopped up to the 11th of August 2010, 07:58:22 hour (8:58:22 Romanian time);
- on the 11th of August 2010, at 07:58:22 hour (08:58:22 Romanian time), the locomotive started to run, making 463 m, with the maximum speed of 22 km/h, then stopped at 08:00:03 hour (09:00:03 Romanian time) when happened the change of the running direction;
- at 08:01:48 hour (09:01:48 Romanian time) the locomotive started to run with the maximum speed of 3 km/h, making 11 m and then stopped at 08:02:01 hour (09:02:01 Romanian time);
- the locomotive started to run at 08:02:17 hour (09:02:17 Romanian time), reaching the maximum speed of 7 km/h, making 26,5 m, followed by the speed decrease to 0

km/h, then appeared a speed increase of maximum 4 km/h in 2,83 m, followed by the speed decrease to 0 km/h at 08:02:46 hour (09:02:46 Romanian time).

B.5.5 Interface man – machine – organization

The railway accident happened on the 11th of August 2010 in the railway station Curtici, consisting in the collision of the freight train no. 39915 with the locomotive EA 40 0167-3, was generated by a human mistake; the passing over the shunting signal on close position. The step in the profound study of the origin and of the devices that generated the mistake was difficult because there was a contradiction between the technical data of the normal operation of the railway station equipment and the statements of the drivers from the locomotive EA 40 0167-3.

The good weather report from the moment of the accident, allowing a good visibility of the signal, as well as the statement of the driver that he ensured that the position of the ground signal excluded the possibility of a perception mistake or omission.

A favorable factor of the accident occurrence can be considered the lack of the possibility of the movements inspector to communicate by radio station with the the staff of the locomotive EA 40 0167-3, taking out one of the system defence.

B.6 Analysis and conclusions

During the investigation there was identified a series of sure material proves:

- the electro-dynamic equipment operated normally, without problems;
- the shunting route from the line 5 to the shunting neck for the locomotive EA 40 0167-3 was normally made, in all safety conditions;
- the entry route for the freight train no. 39915 was normally made in all safety conditions;
- after the collision followed by the derailment of the locomotive EA 91-53-0-478-001-7, the route on the illuminated diagram rested locked with the switches position from TDJ 19A/23A with access to the entry signal X – line 11A (contrary to those stated by the driver, that is direction the shunting neck – marshalling yard);
- the positions of the ground signal M7A had the visibility according to the instructions in force;
- all the seals from the order desk of the movements office were intact;
- the key and the relays hall had the seals intact;
- the entrance process of the freight train no. 39915 was made soon after the end of the shunting route from the line 5 to the shunting neck for the locomotive EA 40 0167-3;
- the weather report was very good.

Besides these sure material proves, the statement of the driver that the shunting signal M7A was on the position „ Shunting allowed beyond the signal” and he saw this position after getting off the locomotive and looking at the shunting signal closely can be stated.

Given those above mentioned, one can conclude that the collision happened because of the irregular over-passing of the shunting signal M7A, indicating stop, by the locomotive EA 40 0167-3, colliding with the freight train no. 3991, that entered the railway station on the line 11A. The irregular over-passing of the shunting signal M7A by the locomotive EA 40 0167-3 was generated by a human mistake, because the shunting signal M7A indicated stop, but one could not establish the cause of the human mistake.

The working instructions concerning the trains running between the border railway stations Curtici and Lokoshaza, between CNCF CFR SA and MAV ZRT, drawn on the 9th of May 2007 do not meet with the present regulations for shunting, as follows;

- the working instructions concerning the trains running between the border railway stations Curtici and Lokoshaza stipulate at the chapter IV, point 36 that in the

railway station Curtici, the shunting with the light engine will be performed according to the open position of the shunting light signals;

- the Regulations for the trains running and shunting of the railway vehicles no. 005/2005 stipulates at the Part II, art. 48 that in the railway stations provided with electro-dynamic equipments are accepted shunting services with light engine according to the open positions of the light signals and to the communications by radio station between the movements inspector and the driver.

The provisions concerning the one driver driving of the trains, that is the regulations of the Traction General Direction no. 310/1441/1993 concerning the testing of the one driver driving of the locomotives (without driver's assistant) stipulating at the part A „Shunting”, chapter I, point 2 that the locomotive has to be provided with radio station equipment in good operation condition and set on the shunting frequency, and the driver is tested and authorized for the shunting in one driver driving (without driver's assistant).

Romania Railway Investigating Body and Hungarian Department for Transports Safety asked for European Railway Agency point of view on the conditions with that a railway undertaking from a member state has to comply in order to carry out railway transport in a border railway station from a neighbor member state.

European Railway Agency point of view was similar with that of Romanian Railway Investigating Body and of Hungarian Department for Transports Safety, that is, although the railway undertaking Train Hungary KFT has the license for the railway transport no. HU 11 2007 00005, granted by Hungarian responsible authority and the safety certificate (part A and B) with European identification number KU/VHF/254-9/2007, granted by Hungarian safety authority, according to European applicable legislation, for Romanian railways on which the freight transport is performed, it has to get also the safety certificate part B granted by Romanian Railway Safety Authority, even if this track sections are limited to the first railway border station.

B.7 Accident causes

B.7.1 Direct cause

The direct cause of the accident is the passing of the shunting signal M 7A, with the position „STOP without passing the signal in the shunting”, without the meeting with the provisions of the specific regulations by the locomotive EA 40 0167-3, followed by the collision with the freight train no. 39915, that entered the station on the line 11A.

The passing of the shunting signal M 7A with the position „STOP without passing the signal in the shunting”, without the meeting of the locomotive EA 40 167-3 with the provisions of the specific regulations, is due to a human mistake.

B.7.2 Underlying cause

Lack of communication between the movements inspector from the railway station Curtici and the driver, because the locomotive EA 40 0167-3 had no radio station set on the shunting frequency of the railway station Curtici and the driver of the railway undertaking Train Hungary did not speak Romanian, according to the art. 5, paragraph (1) from the „Agreement” between Romanian and Hungarian Governments concerning the railway traffic on the border, concluded on the 12th of March 1997.

B.7.3 Root causes

The regulation framework between the railways CFR and MAV is not in accordance with the provisions of the national legislation and community directives in force.

Lack of the safety certification part B, granted by Romanian Railway Safety Authority, that certifies that the railway undertaking Train Hungary complies with the specific requirements necessary for a safe operation of the railway network where it carries out the activity, that is Romanian railways.

C. Safety recommendations

1. To meet the specific requirements necessary for safe operation, the access to the railway networks corresponding to cross-border services for licensed railway transport operators in one of the EU Member States other than Romania will be performed only in the basis of the safety certificate part B issued by the Romanian Railway Safety Authority.

2. To meet the requirements related to professional and linguistic knowledge specific to the Romanian railway infrastructure, the engine driver of one licensed railway transport operator in one of the EU Member States other than Romania will be certified in accordance with the current legislation.

This investigation report will be sent to the public railway infrastructure administrator (CNCF „CFR” SA), to the involved railway undertakings (SC Logistic Services Danubius SRL and Train Hungary), to Romanian Railway Safety Authority and Hungarian Transports Safety Department.

According to the provisions of the Law no. 55/2006 on the railway safety, Romanian Railway Safety Authority will monitor the implementation of these recommendations in Romania.

The Transport Safety Office in Republic of Hungary will take the necessary steps in Hungary to implement these recommendations.

Members of the investigation commission:

- Constantinescu Sorin - investigator in charge
- Olaru Mihai - investigator
- Burlea Sorin - investigator
- Drăghici Marin - investigator
- Păiș Luca - investigator
- Oltenacu Livius - investigator