



REPUBLIC OF SERBIA
CENTER FOR INVESTIGATION OF ACCIDENTS IN TRANSPORT
SECTOR FOR INVESTIGATION OF ACCIDENTS IN RAILWAY TRAFFIC
AND INTERNATIONAL COOPERATION
Nemanjina 11, 11000 Belgrade

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Date: 26.03.2019.

FINAL REPORT ON SERIOUS ACCIDENT INVESTIGATION

Type of accident: Overtaking of the train on the worker
Train No.: Locomotive CEM -7
Place: Obrenovac, TENT Obrenovac, the area of the depot at the station Obrenovac
Date: 13.04.2018.
Time: 13:30



This report presents the results of investigation of serious accident, overtaking of the train CEM-7, owned by JP “EPS”, branch TENT from Obrenovac, on the worker of “Inter-Mehanika” d.o.o. from Skorenovac, which occurred on 13.04.2018. at 13:30 in the area of the industrial track JP “EPS” branch TENT, at the station Obrenovac on the depot track No.10d. In this serious accident, it came to fatal injuries of the worker of “Inter-Mehanika” d.o.o. from Skorenovac.

The Working group for investigation of this serious accident was formed by Director of the Center for Investigation of Accidents in Transport of the Republic of Serbia by Decision 021 No.340-00-1/2018-1-3 from 19.04.2018.

In accordance with the Article 33 of the Law on Investigation of Air, Rail and Water Traffic Accidents (*“Official Gazette of the RS” No. 66/15 and 83/18*) and the Article 23 of the Directive 2004/49/EC of the European Parliament and of the Council, Center for Investigation of Accidents in Transport drafted and published the Final Report.

In this report, all sizes and measurements are expressed in accordance with the International System of Units (*SI*).

The meaning of abbreviations used in the text is explained in the Glossary.



CINS has been established in accordance with the Law on Investigation of Air, Rail and Water Traffic Accidents (*“Official Gazette of the RS” No. 66/15*). The founder is the Republic of Serbia and the holder of founding rights is the Government of the Republic of Serbia.

Department for investigations of railway traffic accidents and international cooperation carries out tasks within the competence of the Centre for investigation of accidents in traffic in relation to rail traffic with the aim of possible improvement of safety on the railways by issuing safety recommendations. The investigation procedure in the field of railway traffic is conducted on the basis of the provisions of the Law on Investigation of Air, Rail and Water Traffic Accidents (*“Official Gazette of the RS” No. 66/15 and 83/18*).

CINS conducts investigations after serious accidents on the railway system with a view to possible improvement of railway safety and the prevention of new accidents caused by the same or similar causes. Serious accident in railway traffic means any train collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious impact on railway safety regulation or the management of safety.

In addition to serious accidents, CINS may also investigate other accidents and incidents that could lead to a serious accident, including the technical failure of structural subsystems or interoperability constituents.

CINS has the discretion to decide whether to open an investigation of other accidents and incidents.

CINS is independent in its work and performs independent accident investigations. The aim of an investigation is to identify the causes and the possibility of improving safety on the railways and to prevent accidents by issuing safety recommendations.

Professional activities related to safety investigations are independent of judicial inquiry or any other parallel investigations which objective is to determine responsibility or the degree of guilt.



Glossary:

CINS	.....	Center for Investigation of Accidents in Transport
ZJŽ	.....	Community of Yugoslav Railways
RS	.....	Republic of Serbia
TENT	.....	Thermo Power Plant Nikola Tesla
d.o.o.	.....	Ltd.
JP	.....	Public Enterprise
EPS	.....	Electrical Power Industry of Serbia
OJT	.....	Basic Public Prosecutor
ŽT	.....	Railway transport
TK	.....	Telecommand
GIŠ	.....	Upper edge of the rail
OB1	.....	Unloading point Obrenovac 1
OB2	.....	Unloading point Obrenovac 2
SS	.....	Safety signalling
MUP	.....	Ministry of Interior
BZR	.....	Health and safety on work
ZOP	Fire protection
HTZ	Hygienic technical protection
PPZ	Fire protection



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1. Summary

1.1. Short description of the serious accident

On 13.04.2018. at 13:30 in the area of the industrial railway JP “EPS“, branch TENT from Obrenovac, at the station Obrenovac from Obrenovac at the track depot 10d, it came to overtaking of the locomotive CEM-7, owned by JP “EPS“, branch TENT, on the worker of “Inter-Mehanika“ d.o.o. from Skorenovac, which on this occasion, had been heavily injured and had, on the same day, succumbed to injuries at the hospital. Workers of “Inter-Mehanika“ d.o.o from Skorenovac, had on the track depots 11d and 12d carried out the installation of derailment detectors on the wagons of series Faboo. Locomotive CEM-7 had been started from the track 10d due to extrusion of the two operating locomotives from the track depot 8d.

Installation of the detectors of derailment had been carried out according to Service Agreement of T-ŽT made between JP “EPS“, branch TENT from Obrenovac (service user) and “Inter-Mehanika“ d.o.o. from Skorenovac (service provider).

1.2. The causes of the accident determined by investigation

Direct cause of the occurrence of the serious accident is the fact that the worker was on the track 10d immediately prior to arrival of locomotive CEM-7, which caused the dangerous situation regarding the occurrence of this serious accident.

The deceased worker had the possibility to hear the work of locomotive from the position where the works had been carried out (area between tracks 10d and 11d) and to notice that the locomotive had started, and he was familiar with the conditions of work on the temporary construction site.

On the occurrence of the respective serious accident the following had the influence: 1) lack of notification that shunting drive is in preparation in the vicinity of the construction works 2) non existence of the coordinator for executions of works, 3) the fact that prior to the accident there was a certain and permanent amount of noise from the locomotive CEM-7 that for a certain period of time had been operating without moving in the vicinity of the construction works, 4) the noise of the locomotive at the moment of overtaking due to which the worker could not hear the warnings from the group of workers and 5) weather situation, that is, the influence of the Sun (see the point 4.3.6.)

The basic cause of this serious accident is noncompliance with the Provisions from the part B, Point 9 Paragraph 4 of the Business order of the station Obrenovac No. 32063/1 from 21.10.2010. The train driver had started the locomotive without giving the aspect of a signal “Forward“ by the shunter. Before starting the locomotive, the train driver did not give with a siren an aspect of a signal “Be careful“ and did not repeat the aspect of a signal during the shunting drive, which is in collision with the provisions of the Article 29, B, Point 11, under a) and lj) of the Rulebook 1 of the Signalling Rulebook (“*Official Gazette ZJŽ*“ No. 4/96, 5/96 and 1/97). During the shunting drive, the train driver had exceeded the maximum speed limit for the paved and unpaved part of the track 10d determined by provisions from the part B, Point 15 of the Paragraph 4 of the Business order of the station Obrenovac No. 32063/1 from 21.10.2010.

The deceased worker, during the execution of works from his professional field on site, did not totally comply with measure BZR, HTZ and PPZ, even though according to the Form 6: Record



of workers trained for safe and healthy work (delivered by “Inter-Mehanika“ d.o.o. from Skorenovac) was trained for safe and healthy work from theoretical and practical part.

According to the Article 9 of the Regulation on occupational health and safety on temporary and mobile construction sites (“*Official Gazette RS*“, No. 14/2009 and 95/2010), the investor was obliged to execute the application of the construction site on the form in the Annex 3 “Application of the construction site“ (see the point 3.3.9.). In the form “Application of the construction site“ there is a column “coordinator for execution of works“. JP “EPS“, branch TENT from Obrenovac did not submit the form “Application of the construction site“, so in that sense, the coordinator for execution of works has not been determined. Also, in the Elaboration on the construction site arrangement works on installment of the derailment detectors No. 088/18 from 13.03. 2018., “Inter-Mehanika“ d.o.o. from Skorenovac in the part II Description of the works states that TENT will determine the person for coordination, supervision and submission of the executed works. Omission of the appointment of the coordinator for execution of the construction works in this case had a consequence that the executors of the work tasks of “Inter-Mehanika“ d.o.o. from Skorenovac (among whom is the deceased worker) were not timely notified on the planned shunting drive of the locomotive CEM-7.

Before the beginning of the works at this construction site, “Inter-Mehanika“ d.o.o. from Skorenovac and JP “EPS“, branch TENT from Obrenovac, were not the subject of regular surveillance of competent inspection in the last two years.

1.3. Main recommendations on subjects to which the report is submitted

Aiming to achieve the possible improvement of railway safety and to prevent occurrence of new accidents, CINS issued the following safety recommendations:

JP “EPS“ branch TENT from Obrenovac :

SR_08/19 JP “EPS“ branch TENT from Obrenovac to conduct the amendment of the procedure, QP.0.14.05 edition 11 from 25.04.2018., in the part 3.1. General, Paragraph 7 (which in this part is identical to the procedure QP .0.14.05 edition 10 from 22.01.2018., and that was valid at the time of occurrence of the respective serious accident), with detailed content of the description of the procedure regarding the dangers and damages in railway traffic that the instructor for Health and Safety and ZOP from Training Department or the Person for Health and Safety at TENT or surveillance body uses when he introduces the employees of the contractor of works and predicts the manner of check of the employees of the contractor of works or to create a special procedure that defines this.



- SR_09/19** JP “EPS“ branch TENT from Obrenovac to align the procedure QP.0.14.05 edition 11 from 25.04.2018. Annex 1 in the part Safety regulations at work in TENT, Paragraph 6, 7 and 8 (which is in that part identical to procedure QP.0.14.05 edition 10 from 22.01.2018., and that was valid at the time of occurrence of the respective serious accident), with the Article 6 of the Regulation on Health and Safety at work on temporary or mobile construction sites (*“Official Gazette RS” 14/2009 and 95/2010*) with the aim of appointing the coordinator for execution of works.
- SR_10/19** JP “EPS“ branch TENT from Obrenovac to conduct additional training of high quality of the staff that participates in carrying out the shunting drives with the purpose of appropriate application of the railway regulations aiming to prevent occurrence of new similar accidents and improve safety in the railway traffic.

“Inter-Mehanika“d.o.o. from Skorenovac:

- SR_11/19** “Inter-Mehanika“d.o.o. from Skorenovac that in Form 6 of the Records on employees trained for healthy and safe work, for the persons at work position of increased risk (worker-locksmith/II locksmith and manager) in the part of description of the works at that position, beside the anticipated obligations, anticipates the training and check for safe work during execution of works on temporary and mobile construction sites at other employer where in the vicinity of the place of execution of works shunting movements are being carried out.

Ministry of Labor, Employment, Veteran and Social Affairs

- SR_12/19** Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate to carry out additional inspection within its competences in terms of fulfillment of conditions under Article 9 of the Regulation on Safety and Health on Temporary or Mobile Construction Sites (*“Official Gazette RS” 14/2009 and 95/2010*), where the investor (JP “EPS” branch TENT from Obrenovac) was obliged to carry out application of the construction site on the form in Annex 3 “Application of the construction site” and appoints the coordinator for execution of works.
- SR_13/19** Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate that upon application of future works by the employer-investor (JP “EPS“ branch TENT from Obrenovac) to carry out the inspection within its authorities, and with the aim of reducing the possible similar accidents.

2. Direct facts of the accident

2.1. Basic data about the serious accident

2.1.1. Date, time and place of the accident

A serious accident occurred on 13.04.2018. at 13:30 in the area of Belgrade, Obrenovac municipality, in the TENT circuit, at the Obrenovac railway station, at the track depots. The area in which the respective serious arose is located in the industrial zone of Obrenovac municipality.

The appearance of the scene of the serious accident is shown in Figure 2.1.1.1.

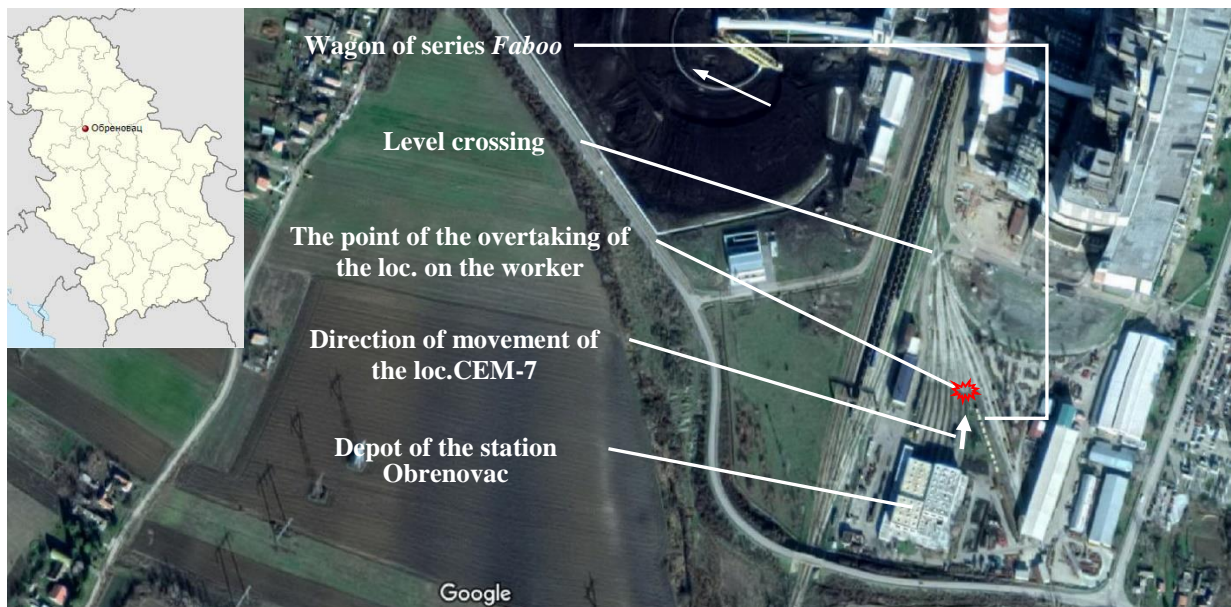


Figure 2.1.1.1: The area of the serious accident site (source: *Google maps*)

2.1.2. Description of the serious accident and the accident site and work of rescue and emergency services

In the area of TENT in Obrenovac, at the track depots of the Obrenovac station, during the drive on the track 10d in the direction from the hall of depot to switch area, at the crossing between the paved and unpaved section of the track, it came to overtaking of the locomotive CEM-7, owned by JP “EPS” branch TENT from Obrenovac, on a worker of “Inter-Mehanika” d.o.o. from Skorenovac. Employees of “Inter-Mehanika” d.o.o. from Skorenovac, at the time of the serious accident, were conducting the works of installing derailment detectors on the wagons of series Faboo and activities on the handover of conducted works. The wagons of Faboo series on which the detectors have been installed were located on the tracks 11d and 12d. Locomotive CEM-7 was located at the the paved part of the track 10d, where on the same part of the track, closer to the hall of the depot, immediately next to the CEM-7 locomotives there was locomotive 443-10. The locomotives CEM-7 and locomotive 443-10 were not interlocked. The drive of CEM-7 locomotive was made for the purpose of shunting in the area of the depot, drawing two correct locomotives from the track depot 8d.



On the track 11d, the check of the executed works was performed on the 6 (six) wagons of the series Faboo with pre-installed derailment detectors. The check of the executed works was carried out by: wagon examiner supervisor and I locksmith for air brakes from JP "EPS", branch TENT from Obrenovac, and from "Inter-Mehanika" d.o.o. from Skorenovac locksmith of II group (deputy manager - deceased worker), and alongwith that activity, the workers of "Inter-Mehanika" d.o.o. from Skorenovac: locksmith of II group and welder were finishing installing of tubes for connecting derailment detectors.

The works on the installation of derailment detectors on the wagons of the series Faboo were performed from 26.03.2018. Until 13.04.2018. up until the occurrence of the serious accident, the installation on a total of 20 wagons was completed.

Due to this accident, where a serious bodily injury was caused to the worker of "Inter-Mehanika" d.o.o. from Skorenovac, who died as a result of injuries sustained in an accident on the same day in a hospital in Belgrade, the Obrenovac Health Care Clinic in the circuit of TENT, the Emergency Service of the Health Center Obrenovac and the Obrenovac Police Station were hired.

Because of this accident, there was no interruption of the railway traffic.

2.1.3. Decision to launch the investigation, composition of the investigation team and conducting of the investigation

First notification of the accident occurred the main investigator for railway traffic received on 13.04.2018. at 14:55 by telephone by the operational engineer of the transport service of the railway transport of TENT Obrenovac. Based on the information received and the facts identified by the investigative team of CINS by going on site, CINS launched an investigation of the serious accident in accordance with the Law on Investigation of Accidents in Air, Rail and Water Traffic (*"Official Gazette of RS" No. 66/15*).

Composition of the Working Group for Investigation of the respective serious accident was determined by Decision 021 No. 340-00-1/2018-1-3 from 19.04.2018. of the Director of CINS on the basis of Articles 6 and 32 of the Law on Investigation of Accidents in Air, Rail and Water Traffic (*"Official Gazette of RS" No. 66/15*).

2.2. Serious accident background

2.2.1. Involved railway staff, contractors, other persons and witnesses

Employees of JP "EPS" branch TENT from Obrenovac and employees of "Inter-Mehanika" d.o.o. from Skorenovac and "Pro Tent" d.o.o. from Obrenovac participated in this serious accident.

From the employees of JP "EPS" branch TENT from Obrenovac, as well as the involved railway staff, in the serious accident participated the train driver of loc. CEM-7, supervisor of the wagon examiner and I locksmith for air brakes.

From the employees of "Pro Tent" d.o.o. from Obrenovac, as well as the staff involved, in this serious accident participated the shunter.

From employees of "Inter-Mehanika" d.o.o. from Skorenovac, as the contractor, in this serious accident participated the locksmith of the II group (deputy manager - deceased worker), locksmith of the II group and welder.

Other staff did not participate this serious accident, as well as other persons and witnesses.

2.2.2. Railway vehicles involved in the accident

In the respective accident locomotive CEM-7 participated.



Figure 2.2.2.1: The appearance of locomotive CEM-7 (source: TENT)

The locomotive of series CEM-7 is a diesel electric locomotive, type DE 040 RE 450CV, intended for traffic on tracks of standard gauge (1435 mm).

The diesel-electric locomotive CEM-7 is manufactured in 1977 in *Compagnie Électro-Mécanique (CEM)*, France.

The locomotive has two bogies and four axles. In each bogie there is one traction electric motor.

There are 2 (two) control stands in the driver's cab. In addition to control instruments, handling equipment, handbrake, there is also a electropower cabinet with a control panel. The driver's cab of the locomotive is not located in the central part, but as shown in Figure 2.2.2.1.

Technical data (some characteristics):

Constructive characteristic	<i>Bo-Bo</i>
Total length via buffers	<i>11940 mm</i>
The height above GIŠ	<i>3820 mm</i>
Net mass	<i>80 t</i>
Axle load	<i>20 t</i>
Gauge	<i>UIC 505/0</i>



2.2.3. Infrastructure and safety-signalling system

Station Obrenovac is the starting station of the Obrenovac - Vreoci railway track on the industrial railway TENT. By the type of transport work, it is the unloading station with the OB1 and OB2 unloading points. The station is intended for unloading of coal, oil, chemicals and other goods for the needs of TENT and other users with whom TENT has contractual obligations for the transport of goods by rail. Regarding the performance of the traffic service of the station Obrenovac it is a distribution station.

In the station there is a special area belonging to the depot for the maintenance of rolling stock with the necessary number of workshops for maintenance of the goods of the ŽT.

The tracks of the depot in the Obrenovac station are marked with Arabic numbers from 1 to 18 with the index "d".

The tracks of the depot are used for garage (accommodation) of operational wagons in reserve, faulty wagons waiting for repair in the workshop outside TENT, for garage (accommodation) of operational and defective locomotives, inspection and settlement of locomotives with consumables (fuel, lubricants, sand, water, etc.).

The track 10d is a workshop and serves to repair the locomotive. The track 11d is a workshop and serves to garage the railway vehicles. Track 12d is a workshop and serves to garage rail vehicles.

The Obrenovac station is secured with an SS electronic device of type ESA-11 SB manufacturer AŽD Prague. The work positions of train dispatcher of the Obrenovac Station Obrenovac - OB2 and the manager of the traffic service of the station Obrenovac have been provided with the Instruction for carrying out the traffic service at the station Obrenovac in the conditions of exploitation of the SS electronic device type ESA-11 SB.

Depot tracks 1d and 2d and the switch 4d are included in the SS device, while the other tracks and switches are not included in the SS device. All switches in the depot area except the 4d switch are not included in the SS device, are installed on-site and in terms of insurance belong to the group of unsecured switches.

In the depot area, between the tracks 10d and 11d, behind the switch 13d, the signal mark 215 has been installed: "Loops in the free profile."

2.2.4. Communication tools

Station Obrenovac is secured with radio devices for mutual communication of all the participants in traffic. The use of radio connection is carried out in the manner prescribed by the Instruction on performing the radio traffic on the railway network ŽT TENT.

The entire radio traffic of the station Obrenovac is recorded with a register device, so the radio station is a communication means when the register device is operating and functional. TK Dispatcher is responsible for controlling the operation of the register device. On the termination of the work of the register device, the train dispatcher TK dispatcher informs all participants in the traffic and acts in accordance with the provisions of the Instructions on use and operation of the register device in the Remote Control Center.

2.2.5. Works at or near the accident site

In the vicinity of the site of a serious accident, on the 11d and 12d track depots of the Obrenovac station were carried out works on the installation of derailment detectors on the wagon of series Faboo, the property of JP "EPS" branch TENT from Obrenovac, by the employees of "Inter-Mehanika" d.o.o. from Skorenovac. The wagons are not intended to move during the installation and control of the installation of the detectors.

The works were carried out according to the T-ŽT Service Agreement, which was registered under the No. 105.0.03.01.-19595/5-2018 of 01.02.2018. in the "EPS" branch of TENT from Obrenovac, and in "Inter-Mehanika" d.o.o. from Skorenovac is registered under the No. 019/18 of 09.02.2018. According to the T-ŽT Service Agreement, the user of the service is JP "EPS" branch TENT from Obrenovac, and the service provider is "Inter-Mehanika" d.o.o. from Skorenovac.

The appearance of the place of works is shown in Fig. 2.2.5.1.



Figure 2.2.5.1: The appearance of the place of works on the wagon of series Faboo (source: OJT from Obrenovac)

On 13.04.2018. the detector coupling tubes were installed and airproofing was performed. The control of the first wagon (which were placed on the 11th track closer to the depot) was carried out by a group of workers in front of the JP "EPS" Belgrade, branch TENT from Obrenovac - the supervisor of the car examiners and the I locksmith for the air brakes, and in front of the " Inter Mehanika "d.o.o. from Skorenovac - locksmith of II group (deputy manager - deceased worker), and alongwith that activity, the workers of "Inter-Mehanika" d.o.o. from Skorenovac: locksmith of II group and welder were finishing installment of tubes for connecting derailment detectors.



2.2.6. Activation of the emergency plan for railways and the sequence of events

Immediately after the serious accident, the industrial railway JP "EPS" Belgrade, branch TENT from Obrenovac informed the Obrenovac Health Center in the TENT circle, Emergency medical service of Obrenovac and the police station Obrenovac.

Industrial railway JP "EPS" Belgrade, branch TENT from Obrenovac informed CINS about the occurrence of the serious accident, that is, the Main Investigator for Rail Traffic.

By Decision No. 5072-E.03.01-4105/4-2016 of 15.03.2016. the Director of Energy Production TENT from Obrenovac, industrial railway JP "EPS" Belgrade, branch TENT from Obrenovac, formed an investigative committee for accidents and incidents that conducted the investigation of the respective accident in accordance with the applicable regulations. Upon completion of the investigation, Report No. 5307-E.03.01-119/11-2018 of 15.05.2018. was drafted.

2.2.7. Activation of emergency plan of public rescue services, police and medical services and sequence of events

According to the allegations contained in the Letter on the Accident Information dated 13.04.2018. No. 5072.E.0301-183054/1-2018 dated 16.04.2018. on the site came, upon notification of JP "EPS" TENT branch from Obrenovac, the team of the Obrenovac Health Center in the TENT circle, the Obrenovac Emergency Medical Center, the Obrenovac Police Station, the Inspectors from the Obrenovac Police Station, the Deputy Public Prosecutor from the Public Prosecutor's Office in Obrenovac, Labor Inspector from the RS Labor Inspectorate, First Department of Labor Inspection for the City of Belgrade and the CINS Working Group. Each of the abovementioned persons performed tasks within the scope of their competencies.

According to the Letter from the Emergency Service of Medical Center Obrenovac No. 1866/1 dated 21.05.2018. the Emergency Medical Service received a call at 1:45 pm that the NN person was stranded on the TENT "A" railway. After receiving the call, the team of the Obrenovac Health Center at the TENT circle first arrived on site, and one team of the Emergency Medical Center Obrenovac was sent on site with the staff: doctor, medical technician and driver. The Obrenovac Emergency Health Center arrived at 13:50 on site, where the injured was found lying on the ground, immobile, amputated feet and with open head injuries and bleeding from the nose and mouth. After the check was carried out and transport preparations were made, the ambulance was transported to the Emergency Center in Belgrade, where they were sent to the resuscitation hall. During transportation, the patient lost consciousness.

According to the allegations from the Letter of Ministry of Internal Affairs of the Republic of Serbia, Police Directorate, Police Directorate for the City of Belgrade, Obrenovac Police Station No. D-2502/18 dated 13.04.2018., the Obrenovac police station's duty station received a notification that in the TENT circle there was an injury to the worker who was run over by the locomotive ŽT. On the site came a squad of police station Obrenovac. On that occasion, the criminal technician conducted a forensic examination of the scene of the site and photographed the same in the state found, based on which the Report on forensic examination of the site No. KT 116-152/2018.



According to the allegations of the Letter OJT in Obrenovac, KTP No. 140/18 from 21.05.2018. Deputy Public Prosecutor from OJT in Obrenovac has made an on-site investigation, upon which he created the Record of on –site investigation

According to allegations of the Letter of Ministry for Labour, Employment, Veteran and Social Affairs of RS, Labour Inspectorate, Department of work inspection for the city of Belgrade No. 163-00-26/2018-04 from 26.07.2018., upon being notified on the serious accident that occurred on the construction site of JP “EPS”, branch TENT, Unloading station Obrenovac, track depot 10d, on 13.04.2018. around 15:30, Republic Labour Inspector had come on site, made the photographs of the accident site and during the surveillance of the same, and the following days, had made a complete recording of condition in the use of safety measures and health on work, upon which he made the Minutes on the executed supervision

2.3. Dead, injured and material damage

2.3.1. Passengers, third parties and railway staff, including contractors

In this serious accident one person died. The operator of the contractor “Inter-Mehanika“ d.o.o. from Skorenovac, locksmith of II group (deputy manager) had died.

There were no injured persons.

2.3.2. Goods, luggage and other assets

In this serious accident there were no damages on goods and other assets.

2.3.3. Railway vehicles, infrastruictre and the environment

In the respective serious accident there was no damage done on the railway vehicles, infrastructure and third persons property.

2.3.4. External conditions - weather conditions and geographic characteristics

The place of occurrence of the respective accident is located in the area of the municipality Obrenovac, in the area of TENT, at the railway station Obrenovac, at the track depot. The area where the respective accident occurred is located in the industrial zone of the municipality Obrenovac.

The area of the place of the respective serious accident is plain.

Geographic coordinates of the accident site are: 44° 40' 09,7" N and 20° 09' 25,7" E.

At the time of occurrence of the respective accident, it was sunny, without precipitation. The northwestern wind of mild intensity was blowing. The meteorological visibility was 20 km. The air temperature at 13:00 was 23.3°C, and at 14:00 was 23.8°C.



3. Minutes on the investigation and interviews

Data, facts and evidence regarding the respective serious accident, were collected and determined based on the following:

- On-site investigation that the Working Group of CINS carried out on site,
- Reconstruction of the serious accident by the Working Group of CINS,
- The materials submitted by JP "EPS" branch TENT Obrenovac,
- The materials submitted by the "Inter-Mehanika" d.o.o. from Smederevo,
- The material submitted by OJT in Obrenovac,
- The material submitted by the First Department of Labor Inspection for the City of Belgrade.

For the respective accident, on-site investigation and investigation was conducted by the investigative committee for accidents and incidents of JP "EPS" branch TENT Obrenovac.

The members of the Police Department Obrenovac, OJT in Obrenovac and First Department of Labour Inspectorate in Belgrade conducted on-site investigation.

3.1. Summary of testimonies

Working Group of CINS has, after the reconstruction of the serious accident from 18.04.2018. at the premises of JP "EPS" branch TENT Obrenovac, carried on the hearing of the employees who were involved in this serious accident.

From the employees of JP "EPS" branch TENT Obrenovac the train driver on the locomotive CEM-7, supervisor of the wagon examiner and I locksmith for air brakes have been interrogated.

From the employees of "PRO TENT" d.o.o. from Obrenovac, the shunter was interrogated.

From the employees of "Inter-Mehanika" d.o.o. from Skorenovac, the locksmith of II group and the welder were interrogated.

3.1.1. Railway staff

The train driver of the locomotive CEM-7 stated: "That day, I worked at the position RT (the reserve of shiftwork) and received an oral order from the locomotive supervisor to go to the track 10d on the CEM-7 locomotive, to start it and to transfer with the locomotive to the eighth track to pull the two locomotives from the check. I came to the locomotive from the side of the depot ... Coming to the locomotive, I walked past our workers who were working at 5, 6, 7, there were people around. I climbed on the locomotive. On that occasion I did not have to do a daily check of the locomotive because the locomotive was already working several times, a colleague was driving, I was driving, otherwise the first start of the locomotive requires a daily check ... I started the diesel engine.

The locomotive of the CEM series loses air when the batteries are switched off, it was turned off, discharged completely. The diesel engine worked for at least five minutes until reaching the difference in order to unclutch and to be able to brake. When the locomotive got the difference, I made sure, through the left window in the direction of the drive, the left side of the driver's cab, that there was no one on the track 10d. Wagons that were on the track 11d were in the border. Switches that were on my drive route were set for my drive. The shunter was coming from the



level crossing to the switch that separates 10d and 8d track. I gave an aspect of a signal once "Watch out", looked out the window, I did not see anyone, so the track was free, the switches were set up for my route, I drove to behind of the switch that separates the 10d and 8d track and stopped the locomotive. I changed the direction. At that moment comes the shunter who turns the switch that separates 10d and 8d track, I think it is the switch 10d. When I looked to the depot, my colleague (the train driver), I see that he made a phone call, I see that something is happening. He gives me the stopping signal in front of the depot, and he tries to reach me by the telephone, that was not with me. I climbed down the locomotive and start moving toward him, he comes and says: "you ran over a man." Only then I saw, the man in the track, I had not heard anything, no punch. Before I started the CEM locomotive I heard some people talking, I was not, as the train driver and the participant in that traffic, notified that people were working on 11d track ...nobody told me. And shunter, I started without permission of the shunter to give me the aspect of a signal "Forward". That is the usual action with us. In case that we should go out on 5a track, then we seek permission from the train dispatcher to pass the shunting and go on 5a. The train dispatcher says, if the switches are leading, go out, he doesn't give us the order. I had a condition, the switches were leading, everything led, I had the condition to go to the switch 8. Several time, several drives inside the depot we have done in that way. Shunting is performed by one person, one train driver. When I started the locomotive, in the driver's cab I was watching through the window from the left side in the direction of movement. The locomotive was going with the shorter part forward. Before I started, I was looked out from the window. When I continued with the drive, I was not outside with my body, just my head was outside, and that was enough to take a look. I did not see anyone at the track. I saw the shunter, he was at the level crossing. I would only add that, the worker who were working there, maybe, since I did not see anyone, but they did not even have the vests, maybe they would be more visible if they were carrying them. And one more thing. It was sunny, full Sun was shining from this side. So the Sun was, since it was around half past one, turned towards me, slightly to the left in the direction of movement. It was so sunny and it disturbed a lot. So later, when I stopped the locomotive and looked at the depot, the influence of the Sun was so great. I was not familiar with the fact that the workers were carrying out the works on the tracks 11d and 12d, nobody at the station warned me. I did not have alcohol in my blood. I have nothing more to say."

The shunter said: "The train driver sent me on a shunting to draw out the two machines from the depot. While I was coming, at the level crossing, the loc.CEM-7 went out from 10d. She came to the level crossing, I turned her and another train driver came from the depot who said that a man was ran over. I could not see the place of the accident because the loc. CEM-7 went out before that. The CEM-7 was standing there and I asked what I should do, and he told me to pull out the two machines ... the machine was clutched, alone. The train driver had probably looked at the switches and he came to the switch so that I could turn it around. I did not manage to appear in front of the locomotive and give the aspect of a signal: "Forward", he came out before I came. We give an aspect of a signal: "Forward", when a machine starts from the track depot. At this moment I did not give an aspect of a signal "Forward", because I was, as I said, passed the level crossing and the machine came out itself. I did not get there, she went out alone. Just to explain to you, when the switches are turned and when the machine is left itself, the machine itself can come out, I do not need it. Th dispatcher told me to go just for the machine to pull out the machine from 8d. There were two machines there. Communication between the shunter and the train driver on a shunting is accomplished by a radio connection, a flag, a whistle and orally. Shortly before the accident, I had no communication with the train driver. The dispatcher told me to leave and to carry out this shunting. Since the locomotive has already arrived, I asked the train driver whether



we should go to 8d, he told me to go and I turned the switch. Then another train driver appeared and said he that the man was ran over. I have nothing more to say “.

The first locksmith for the air brake said: "We received the works from the “Intermehanika” d.o.o. workers they performed with the car examiner supervisor, a colleague TENT worker. We received papers from technical work and air... The deceased was working together with me in that part to investigate whether the detectors they made were not blowing. We were between the fourth and fifth wagon when the locomotive was on and it was on for almost ten minutes. When we finished the fifth wagon and crossed between the fifth and sixth wagon to examine the tube's tightness, at that moment the car examiner supervisor sat on a box where the signs are placed. I went behind the box to rest a little. The deceased took the bucket and went between the fifth and the sixth wagon where he left it. In that moment I have not seen him more. When I was behind the box with signs, the locomotive slowly starts to pass beside me. I turned to unloading station, he (deceased) was already in the track, standing and holding a bottle with water. At that moment when the locomotive was approaching, I started to shout run away...run, run away. I was shouting loud as well as one of the workers of Intermehanika. He (the deceased) probably did not hear. The locomotive hits him at that moment. It hit him while he was on the crushed stone, not on the concrete, but that means that he was on the track...I only saw when he fell, when one leg dropped off, I could not see anything more...I was already in shock...I did not hear the sound signal from the locomotive...when the machine is on, we already look where it is, because the shunting is done here every five to ten minutes...I did not notice that something was wrong with the deceased. He did not complain about any problems. Everything was normal. I had all the necessary protective equipment that should be there. They had the same, the contractors, the workers of Intermehanika had protective suits and helmets, I do not remember about the vests. I have nothing more to say.”

Wagon examiner supervisor stated: “I was working with the first locksmith for air brakes on tasks about airbrakes and with the deceased worker on the inspection of the works they performed on the installation of the derailment detectors, we worked on the track 11d where these wagons were set. We have finished four wagons, they were examining, I was controlling that they remove all the lacks they had. At the moment of overtaking of the locomotive on the deceased worker, I was sitting at the box where the picture signs are placed. I set there to rest. Since in the meantime the locomotive started on the track 10d, then the air passage cannot be heard no more, that is, we can no longer notice the place where the loss of air occurs upon examining the wagons. I set and listed the wagons that were done. I heard the locomotive working, it comes from behind. Since I was focused on the task I was finishing, I did not notice what happened besides until the moment I heard the screams of people asking to stop the locomotive. I did not notice that the aspect of a signal “Watch out“ was given. The workers of “Inter-mehanika“ did not carry vests nor helmets. They had the working suits, shoes and gloves. I was the only one with the vest. I have nothing more to say.”

The locksmith of II group stated: "I was below the sixth wagon (the last in a row, looking from the depot) when I heard the scream run away, run away. At that moment I turned and looked in that direction ... I saw the locomotive and saw the body, so I saw him in the upper part where it spun him, where it milled him and when the locomotive passed, when it dropped it in front of me, then I ran out and that's all I saw. I did not see where the victim was standing, nor when he was hit and from where he was hit. When I arrived, he was in the track, both legs were cut off ...Then I saw and then I felt the bigger shock. I did not hear the train driver gave the aspect of a signal “Watch out“...We passed the training, we had this and last year. The biggest training is the fact that we work over thirty years on the wagons. We passed the training in Intermehanika, we were talked about this at Intermehanika, not here. The only ones who took care of us when we were working were the one who received the wagons, they were the only ones to warn us. From the



protective equipment we had everything, we have helmets, only when it is inconvenient we put them off, and we had vests, I was not too tired or burdened at that moment. I had shoes, helmet, working suit, I did not have the fluorescent vest. The deceased had the working suit, shoes...the workers of TENT did not have the fluorescent vests. I have nothing more to say."

The welder stated: "I was in the workplace and I was helping the locksmith of II group. Then, this one of our workmen (deceased) was separated out here on this track 10d. He stepped on the track 10d before the locomotive started. I heard when the locomotive was on, when it started, I did not hear the the aspect of a signal: "Watch out". I was standing between the 10d and 11d tracks, near the box where the signal marks were set, near the two TENT workers. When the locomotive started, I saw and shouted run away, run away, remove from there. He (the victim) was turned back and was drinking water, he did not hear me. He was standing on a paved part of the track, he was not on the edge between the paved part of the track and the part with crushed stone. We shouted help, help, we were crying. In Intermehanika we had papers to read and signed them, and we also had to be careful here (in TENT). I do not recall what was written in these papers ... We had helmets, gloves, shoes, work suits and fluorescent vests from protective equipment, we all had training from Intermehanika... I have nothing more to say. "

3.1.2. Other witnesses

There were no witnesses of this accident.

3.2. Safety Management System

At the time of occurrence of the serious accident, JP "EPS", branch TENT from Obrenovac did not have established the Rulebook of Safety Management System (SMS). At the time of the serious accident, JP "EPS", branch TENT from Obrenovac had a Decision on issuing a certificate for safety for the management of an industrial railway I-01-1 No. 340-359-4/2016 of 29.07.2016. issued by Directorate for Railways with validity of five (5) years.

Rulebook of the Safety management system (SMS) JP "EPS", Branch TENT from Obrenovac, Railway transport was established on 16.07. 2018., after which the Directorate for Railways I-01-1 No.: 340-30-7 / 2018 of 21.08.2018. Decision on the issuance of the Transport Safety Certificate - Part A and Part B was delivered.

Industrial railway JP "EPS" branch TENT from Obrenovac is in accordance with the Law on railway safety and interoperability of the (Official Gazette of the Republic of Serbia No. 104/13, 66/15 - other law and 92/15), formed an investigative committee that conducted the investigation of the respective accident. Upon completion of the investigation, the Investigation Report No. 5307-E.03.01-119 / 11-2018 of 15.05.2018 was made.



3.3. Relevant international and national regulations

3.3.1. Law on Railway Safety and Interoperability (*“Official Gazette RS“ No. 104/2013, 66/2015 - other laws and 92/2015*) repealed on 08.06.2018.

Important note: at the time of occurrence of the respective accident, this Law was in application.

X. TRAFFIC REGULATION AND MANAGEMENT

...

Business order of the station

Article 68.

The technical equipment of the official site, the manner of performing the railway service of the workers, the obligations of the manager and the railway undertaking, their mutual cooperation in the performance of traffic, as well as the tasks that precede the formation of the train, that is, following the disassembly of the train and performing other tasks in order to preserve the safety and regularity of the railway traffic in the area of the official site, are determined by the business order of the station, which is issued by the manager.

...

XVII. INDUSTRIAL RAILWAY, INDUSTRIAL TRACKS AND TOURIST-MUSEUM RAILWAY

1. Industrial railway

Article 134. (excerpt)

Economic entities that transport persons and / or goods for their own needs on industrial railways are obliged to perform rail transport on industrial railways in the manner and under the conditions determined by this Law.

...

3.3.2. Business order of the station Obrenovac No. 32063/1 from 21.10.2010.

B. ORGANIZATION OF WORK AND THE MANNER OF TRAFFIC OPERATION

...

2. OBLIGATIONS OF EMPLOYEES ON THE WORK POSITIONS

...

2.5. Obligations of the train dispatcher

...

2.5.1. Obligations of the train dispatcher OB2

2.5.1.1. Obligations of the train dispatcher OB2 that regulates the traffic (excerpt)

regulates safe and regular reception and dispatch of trains, as well as safe, regular and economic arrangement of trains-shunting tasks.



...

2.7. Obligations of the train driver on the shunting (excerpt)

...

- conducts shunting upon order of the train dispatcher on OB2 traffic,

...

In conducting tasks of this work position, cooperates with other participants in traffic,

...

2.10. Obligations of the shunter (excerpt)

Shunter of the station Obrenovac conducts the following tasks:

- conducts all the shunting tasks at the station,

...

- handles the switch on site upon order of the train dispatcher,

...

- takes care of the means and measures of BZR and ZOP,

...

9. THE MANNNER OF COMMUNICATION DURING SETTING OF THE SHUNTING DRIVE ROUTES (excerpt)

...

About shunting on the tracks of the depot, the train dispatcher on a schedule of shunting or orally tells shunter what should be done, and the shunting routes sets the shunter by manually setting the switches on the spot. After setting a shunting route on the depots of the track, shunter by hand signals, orders the startup of the shunting composition.

...

15. DRIVING SPEED (excerpt)

...

The driving speed on the track depots is up to 10 km/h, except on paved tracks and in the depot hall must not exceed 5 km/h.

...



3.3.3. Rulebook 1, Signalling Rulebook (*“Official Gazette ZJŽ “No. 4/96, 5/96 and 1/97”*)

Note: JP „EPS “branch TENT from Obrenovac by the act of Procedure QP.5.05.01 Railway Transport, edition No. 6 of 12.04.2017. prescribed the mandatory application of this manual in railway transport (ŽT).

Section V

Aspects of a signal of the train and station staff

Aspects of signal of the staff of the traction vehicle

Article 29 (excerpt)

A. Basic provision of the aspects of a signal

...

2. The train driver gives aspects of a signal of the staff of the traction vehicles by using the siren of the traction vehicle.

...

3. Aspect of a signal 67: “Watch out“

one long sound: —————

...

B. Purpose and use of the aspects of a signal

11. Aspect of a signal 67: „Watch out“ gives the train driver

...

a) in cases when it is necessary to warn on approaching of the train or needs to remove from, that is, to be distant from the track. This applies to the train driver of every driving vehicle on carrying out the shunting drives;

...

lj) when necessary in the interests of general safety and warning of other persons or the dispersal of animals from the track;

...

Aspects of signal of the shunting staff

Article 32 (excerpt)

A. Basic provisions, aspects of signals

1. Aspects of signals of the shunting staff serve, in shunting drives of all kinds, to instruct with them starting in the necessary direction, regulate speed and stop.

2. Aspects of signals of the shunting staff are shown by staff performing shunting operations or by switch staff, serving the switches when shunting.

...

6. Aspect of a signal 85: “Forward“



day sign:

waving the unfolded signal flag upright up and down in longer strokes, and besides that one long whistle with a mouth whistle: —————

(see Fig.131)

Figure 131

...

3.3.4. Shunting Instruction (“Official Gazette ZJŽ “No. 3/80, 6/83, 3/87, 4/88, 6/91 and 2/94)

Note: JP “EPS “branch TENT from Obrenovac by act Procedure *QP.5.05.01* Railway Transport, edition No. 6 from 12.04.2017. prescribed the obligatory application of this instruction in the railway transport (ŽT).

Terms

...

7. (excerpt)

Types of shunting movements :

- shunting movement is pulling or pushing the vehicle by a locomotive or rail motor vehicle up to a place, as well as approaching to or leaving of the traction vehicle with or without vehicle from the vehicle which is standing, upon management of the shunting workers. This type of shunting drive in motion or ready for motion we name “shunting composition“

...

- shunting movements cannot be done without participation or presence of workers professionally trained for shunting activities (Point 12. of this Instruction),

...

Shunting workers

...



12.

Shunting workers include the workers of shunting traction vehicle and workers of certain profession of the unit on which area shunting activities are carried out. These workers are grouped into a maneuvering unit, which is a common name for the operator of shunters and a certain number of shunters, depending on the scope and type of shunting tasks, local and weather conditions and other technological conditions, but not less than two workers (operator of shunters and shunter).

...

13. (excerpt)

The shunting traction vehicle's staff include the train driver on the shunting and the assistant train driver. Depending on the technical characteristics of the shunting traction vehicle, it is predicted to be used by only the train driver or train driver and assistant train driver, which is prescribed by a special technical instruction.

...

122. (excerpt)

Before the shunting movement, the operator of shunters and the shunters make sure that:

- the track from which the shunting composition starts, from the last wagon in the composition, and the track on which they drive are free, as well as the corresponding edges of the track;

...

- that workers are not injured, as well as the passengers and other persons;

...

- to, on his own initiative, take other safety measures that are not stated here.

...

3.3.5. Law on Safety and Health at work (*“Official Gazette RS“ No. 101/2005, 91/2015 and 113/2017 - other law*)

I BASIC PROVISIONS

Article 4 (excerpt)

Certain expressions used in this Law have the following meaning:

...

2) An employer is a domestic or foreign legal entity, that is, a natural person that employs, that is engages one or more persons:

...

3) Employee representative is a person chosen to represent employees in the field of occupational health and safety with the employer;

...



6) The work space is a place intended for carrying out work with the employer (in the facility or in the open, as well as on temporary and mobile construction sites, facilities, devices, vehicles, etc.) in which the employee resides or has access during work and who is under the direct or indirect control by the employer;

7) The work environment is the place where the work is carried out and includes work positions, working conditions, working procedures and relationships in the work process;

...

III OBLIGATIONS AND RESPONSIBILITIES OF THE EMPLOYER

1. Basic obligations

...

Article 15 (excerpt)

The employer is obliged to:

...

4) train the employees for safe and healthy work;

...

2. Special obligations

Article 18 (excerpt)

The employer is obliged to, at least eight days before the commencement of work, inform the Labour Inspection on:

1) the beginning of his work,

...

An employer who performs works on construction of facilities in accordance with the regulations on safety and health at work in temporary or mobile construction sites, shall be obliged to prepare a prescribed Elaboration on the arrangement of the construction site, which, along with the report on the commencement of work, shall submit to the competent labor inspection.

...

Article 19 (excerpt)

When two or more employers share a workspace in their jobs, they are obliged to cooperate in the application of the prescribed measures for the safety and health of employees.

Employers referred to in Paragraph 1 of this Article are obliged, taking into account the nature of the activities they perform, to coordinate activities related to the application of measures to eliminate the risk of injury, that is damage to the health of employees, as well as to inform each other and their employees and/or representatives of employees of these risks and measures for their elimination.

The method of achieving cooperation from Paragraphs 1 and 2 of this Article employers shall establish by a written Agreement.

The agreement referred to in Paragraph 3 of this Article determines a person to coordinate the implementation of mutual measures to ensure the safety and health of all employees.

...



3. Training of employees

Article 27(excerpt)

...

Training for a safe and healthy worker's work must be adjusted to the specifics of his/her workplace and is carried out according to the program, the content of which the employer must, when necessary, renew and change.

If the employer orders the employee to simultaneously perform jobs in two or more workplaces, he is obliged to enable the employee to work healthily and safely at each of the work positions.

Article 28 (excerpt)

...

Periodic checks of the skills for safe and healthy work of an employee working at an increased risk workplace shall be carried out no later than one year after the date of the previous check, and at other workplaces no later than four years from the date of the previous check.

...

3.3.6. Rulebook on the content of the Elaboration on construction site arrangement **(*"Official Gazette RS" No. 121/2012 and 102/2015*)**

Article 1.

This Rulebook prescribes the content of the Elaboration on construction site arrangement where the works are carried out on the construction of facilities in accordance with health and safety regulations on temporary or mobile construction sites, and by which, in accordance with the performed risk assessment of injury and damage to health in workplaces and in the workplace environment (for organization and technology of performing the works) on the construction site where the works are performed, in accordance with the project documentation and application of technical measures and measures on occupational safety and health, the detailed technical-technological elaboration of measures to prevent, eliminate or reduce risks, in relation to the tasks and activities that are carried out during the execution of works, is carried out.

Article 2. (excerpt)

Elaboration on arrangement consists of:

- 1) the construction site scheme, or the situational plan;
- 2) a description of works;
- 3) measures for safety and health at work.

...

The contents of the Elaboration on construction site arrangement should be available on the construction site and correspond to the actual state, as well as to include the necessary and up-to-date attachments, as follows:

- 1) the list of work positions with increased risk;
- 2) a list of employees deployed at workplaces with increased risk and medical examinations of staff assigned to these positions;



3) a list of employees trained for safe and healthy work, including a signed list of employees familiar with the safety and health measures established in the competent Elaboration.

3.3.7. Rulebook on Occupational Safety and Health Records (“Official Gazette RS“ 62/2007 and 102/2015)

Records on employees trained for healthy and safe work

Article 8. (excerpt)

Records on employees trained for healthy and safe work is done on the Form 6 in which the data are entered:

...

3) The name of the work position;

4) the description of works at that work place;

...

8) the risks with which the employee is familiar with during the training for health and safe work;

...

3.3.8. Rulebook on Previous and Periodic Medical Examinations for workplaces at increased risk positions (“Official Gazette RS“ 120/2007, 93/2008 and 53/2017)

Medical examination report

Article 8.

Report on the performed previous medical examination of the employee - Form 3, or report on the periodic medical examination of the employee - Form 4 is filled out by the Labor Medicine Service in three copies, from which to the employer and the employee (which his copy submits to the chosen doctor) is submitted one copy of the Report, and one copy is being kept for his/her needs- not later than 15 days from the day of the previous medical check being executed.

The reports referred to in paragraph 1 of this Article contain an assessment that the employee is medically fit or that he/she is not capable of working in the workplace at an increased risk.

3.3.9. Regulation on Safety and Health at Work at temporary or mobile construction sites (“Official Gazette RS “14/2009 and 95/2010)

Important note: at the time of occurrence of the respective serious accident, this Regulation was valid.

Article 3 (excerpt)

Some terms used in this Regulation have the following meaning:

- 1) temporary or mobile construction sites (hereinafter: construction sites), are all construction sites, that is, locations in the area where the works listed in the Works Review during the construction of the facility (Annex 1) are performed;



...

- 5) the coordinator for safety and health at work during the execution phase (hereinafter referred to as: the coordinator for the execution of works) is a natural person that the investor or investor's agent determines in writing that, during the execution of works, to perform the tasks referred to in Article 13 of this of the Regulation

...

II DETERMINING THE COORDINATOR FOR DRAFTING THE PROJECT AND COORDINATOR FOR EXECUTION OF WORKS

Article 4 (excerpt)

The investor or the investor's agent is obliged to designate one or more coordinators for the draft of the project and one or more coordinators for the execution of works when they perform at the construction site or it is foreseen that the works will be performed by two or more contractors at the same time.

The obligations of the investor or the agent of the investor referred to in Paragraph 1 of this Article shall not be related to the construction of facilities up to 300 m², except in cases where the works listed in the Work Review are executed, where the specific risk of injury and damages to the health of employees arises (Annex 2) or when for the construction of such a facility is required an Application of the Construction site (Annex 3).

...

Article 6

For coordinator for execution of works can be determined a person who has:

- 1) at least completed first-level studies (basic academic or basic vocational studies), in the fields of architecture, civil engineering, electrical engineering and computer engineering, environmental protection engineering and occupational safety engineering, mechanical engineering or traffic engineering, that is, a study of at least two years in the relevant field;

- 2) passed a professional examination for the performance of the work of the coordinator for the execution of works in accordance with this Regulation and

- 3) at least three years of work experience in:

- (1) building construction facilities or

- (2) works of safety and health at the contractor

The employees of the contractor can not be designated as the coordinator for the execution of works.

IV APPLICATION OF THE CONSTRUCTION SITE

Article 9 (excerpt)

...

The investor or the investor's representative is obliged to fill in the Application of the construction site (Annex 3) regardless of the duration of the works and the number of employees



who perform those works, when the works listed in the Review of the works are presented where the specific risk of injury and damage to health on employees appears (Annex 2).

The investor or the investor's representative is obliged to submit filled in Application of the construction site (Annex 3) to the competent labor inspection not later than 15 days prior to the beginning of work on the construction site, and a copy of the Construction site Application (Annex 3) shall be placed in a visible place on the construction site.

...

VI PHASE OF EXECUTION OF WORKS

1. Application of the principles of prevention

Article 12 (xcerpt)

During construction works, preventive occupational health and safety measures shall be applied, based on the principles established by the Law on Health and Safety at work, and in particular measures relating to:

...

9) cooperation between employers and other persons at the construction site;

...

2. Tasks of the coordinator for execution of works

Article 13 (excerpt)

Coordinator for execution of works conducts the following tasks:

1) coordinates the principles of prevention in case when he:

(1) decides on technical, technological and / or organizational solutions, in order to plan different elements or phases of works to be carried out simultaneously or one after another,

(2) assess the deadlines needed to complete these works or work phases;

2) coordinates the implementation of planned activities with the aim of ensuring that employers and other persons:

(1) preventive measures in accordance with the provisions of Article 12 of this Regulation are consistently applied,

...

4) organizes cooperation and mutual informing of all employers and other persons who simultaneously or one after another carry out works on the construction site, coordinates their activities regarding the implementation of measures for safety and health at work in order to prevent the occurrence of occupational injuries and occupational diseases;

...

X SUPERVISION

Article 19

Inspection supervision over the application of this regulation shall be performed by the ministry in charge of labor - Labour Inspectorate, in accordance with the Law.



Annex 1: REVIEW OF WORKS UPON CONSTRUCTION OF FACILITIES

...

5. Reconstruction or equipment.

...

Appendix 2: REVIEW OF WORKS UPON WHICH THERE APPEARS A SPECIFIC RISK OF OCCURRENCE OF INJURIES AND DAMAGES TO THE HEALTH OF WORKERS

...

2. The work upon which there appears a specific risk for the workers due to exposure to chemical or biological agents, that is, upon which appear specific dangers and/or harmfulness, or a medical examination of the workers is prescribed for executing these works.

...

3.3.10. Service Agreement T-ŽT, with Appendix 4. Rulebook on safety at work, which is in JP “EPS” branch TENT, registered under No. 105.0.03.01.-19595 / 5-2018 from 01.02.2018., and the “Inter-Mehanika” d.o.o. from Skorenovac registered under No. 019/18 of 09.02.2018.

Note: The document is as a part of the Agreement: Annex 4: Rulebook on Safety at Work, and instead of it the following document is attached: Rules on Safety at Work at the branch TENT-Obrenovac.

RULES ON SAFETY AT WORK AT THE BRANCH TENT-OBRENOVAC.

...

I OBLIGATIONS OF THE SERVICE PROVIDER (excerpt)

...

2. For works for which by the Law on BZR is obliged to draft the Elaboration on the Construction site arrangement (in accordance with the Rulebook on the contents of the Elaboration on the arrangement of the construction site ("Official Gazette RS" No. 121/12), at least three days before the commencement of works to the BZR and ZOP Service delivers:

- Elaboration on arrangement of the construction site,
- a certified copy of the Application of the commencement of work, which he submitted to the competent Labour Inspection,

...

- evidence that the employees are familiar with the content of the Elaboration and the foreseen measures for safe and healthy work,

...

- evidence that employees are familiar with these Rules (list of persons with their own signed statements,



- the name of the responsible person at the construction site, his deputy (in the absence of the responsible person in the second and/or third shift, the holiday, etc.)

...

3. Appoints a responsible person for safety and health at work, who will be available all the time during the execution of works and his deputy (in the absence of a person for BZR in the second/third shift, holidays etc.).

...

13. In detail familiarize his employess, in accordance with the Elaboration on the arrangement of construction sites, with the dangers of working in such energy plants, that is, the danger of working with electricity, the danger of fluids of high pressure and temperature, the danger of working at heights, from working in cramped space, the danger of chemicals, gases, rail traffic and other that can be dangerous to the life and health of employees. ...

3.3.11. Regulation on Safety and Health at Work at temporary or mobile construction sites **(“Official Gazette RS “14/2009, 95/2010 and 98/2018)**

Article 3 (excerpt)

Some terms used in this Regulation have the following meaning:

- 1) temporary or mobile construction sites (hereinafter: construction sites), are all construction sites, that is, locations in the area where the works listed in the Works Review during the construction of the facility (Annex 1) are performed;
- ...
- 5) the coordinator for safety and health at work during the execution phase (hereinafter referred to as: the coordinator for the execution of works) is a natural person that the investor or investor's agent determines in writing that, during the execution of works, to perform the tasks referred to in Article 13 of this of the Regulation;

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The investor or the investor's agent is obliged to designate one or more coordinators for the draft of the project and one or more coordinators for the execution of works when they perform at the construction site or it is foreseen that the works will be performed by two or more contractors.

The obligations of the investor or the agent of the investor referred to in Paragraph 1 of this Article shall not be related to the construction of facilities up to 300 m², except in cases where the works listed in the Work Review are executed, where the specific risk of injury and damages to the health of employees arises (Annex 2) or when for the construction of such a facility is required an Application of the Construction site (Annex 3).

...



Article 6

For coordinator for execution of works can be determined a person who has:

- 1) completed high education of adequate profession on the level equivalent to academic studies, that is, vocational studies with a scope of at least 240 ESPB, in the fields of: architecture, civil engineering, electrical and computer engineering, environmental protection engineering and occupational safety engineering, mechanical engineering or traffic engineering.
- 2) passed a professional examination for the performance of the work of the coordinator for the execution of works in accordance with this Regulation and
- 3) at least three years of work experience in:
 - (1) building construction facilities or
 - (2) works of safety and health at the contractor

The employees of the contractor can not be designated as the coordinator for the execution of works.

IV APPLICATION OF THE CONSTRUCTION SITE

Article 9 (excerpt)

...

The investor or the investor's representative is obliged to fill in the Application of the construction site (Annex 3) regardless of the duration of the works and the number of employees who perform those works, when the works listed in the Review of the works are presented where the specific risk of injury and damage to health on employees appears (Annex 2).

The investor or the investor's representative is obliged to submit filled in Application of the construction site (Annex 3) to the competent labor inspection not later than 15 days prior to the beginning of work on the construction site, and a copy of the Construction site Application (Annex 3) shall be placed in a visible place on the construction site.

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VI PHASE OF EXECUTION OF WORKS

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...

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...

2. Tasks of the coordinator for execution of works



Article 13 (excerpt)

Coordinator for execution of works conducts the following tasks:

1) coordinates the principles of prevention in case when he:

(1) decides on on technical, technological and/or organizational solutions, in order to plan different elements or phases of works to be carried out simultaneously or one after another,

(2) assess the deadlines needed to complete these works or work phases;

2) coordinates the implementation of planned activities with the aim of ensuring that employers and other persons:

(1) preventive measures in accordance with the provisions of Article 12 of this Regulation are consistently applied,

...

4) organizes cooperation and mutual informing of all employers and other persons who simultaneously or one after another carry out works on the construction site, coordinates their activities regarding the implementation of measures for safety and health at work in order to prevent the occurrence of occupational injuries and occupational diseases;

...

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Inspection supervision over the application of this regulation shall be performed by the ministry in charge of labor – Labour Inspectorate, in accordance with the Law.

Annex 1: REVIEW OF WORKS UPON CONSTRUCTION OF FACILITIES

...

5. Reconstruction or equipment.

...

Annex 2: REVIEW OF WORKS UPON WHICH THERE APPEARS A SPECIFIC RISK OF OCCURRENCE OF INJURIES AND DAMAGES TO THE HEALTH OF WORKERS

...

2. The work upon which there appears a specific risk for the workers due to exposure to chemical or biological agents, that is, upon which appear specific dangers and/or harmfulness, or a medical examination of the workers is prescribed for executing these works.

...



3.4. Railway vehicles and technical installations functioning

3.4.1. Control, command and signalling

The area of the depot of the station Obrenovac is not included, where at the time of occurrence of the respective serious accident the shunting drive is realized, in the SS device. All the switches in the shunting driving route are not included in SS device, are set on site and in terms of security they are in the group of unsecured switches. On the switches there were no records of interruptions or faults.

3.4.2. Infrastructure

At the time of the respective accident, on the infrastructure and facilities in the area of the depot of the station Obrenovac station where the shunting drive was carried out there were no interruptions or faults.

3.4.3. Communication tools

At the time of the respective accident, on communication tools there were no interruptions or faults.

3.4.4. Railway vehicles

In the period from 31.12.2015. until 01.02.2016. in "Sinvoz" d.o.o. from Zrenjanin, on the CEM-7 locomotive the main repair and the change of engine was made.

From the data on the regular maintenance of locomotive CEM-7 delivered from JP "EPS" branch TENT from Obrenovac, it can be seen that regular maintenance in the period from 13.04.2017. until 13.04.2018. was carried out in accordance with the Instruction for the Maintenance of Railway Rolling Stock No. 97.E.03.01-183234 / 1-2016 of 13.05.2016. (with the accompanying Instructions on Amendments to the Instruction) and the Instruction for Maintenance of Railway Rolling Stock No. 5072-E.03.01.-65387 / 1-2018 of 02.02.2018.

From the records of failures, delivered by the JP "EPS" branch TENT from Obrenovac, it can be seen that on the locomotive CEM-7 at the time of the respective serious accident there were no failures, malfunctions or damage that were not remedied.

In the form Handover of traction vehicle (form SV-1) for 13.04.2018. there were no complaints regarding lacks of the locomotive CEM-7 detected during the handover of the locomotive.

The CEM-7 locomotive was inspected after the serious accident was investigated and no faults, defects or damages were detected that could have caused the occurrence of a serious accident.

On the CEM-7 locomotive the speeding register device type EB96 was installed, manufacture No. 1014233. For the given speeding register device, the Certificate of Speedometer EB96 was issued (document code: EB96-20-17-001 and date of test: 25.10. 2017) confirming that EB96 speedometer fully meets the manufacturer's specifications.

On the basis of a tabular report of the train driving of the traction service from 16.05.2018, for locomotive CEM-7 (loc. No. 647007) from 13.04.2018. and for the train driver who was driving the locomotive in the respective serious accident it can be concluded that from the moment of log in of the train driver before the moving of the locomotive, the use of a siren was not registered in order to give the aspect of a signal "Watch out". The use of the siren is not registered even during the whole shunting drive, not even after stopping after passed 116 m. The log-in time of the train driver is 13:29:55 (according to the clock from the speeding register device). The beginning of moving of the locomotive is registered at 13:31:36. After the beginning of moving, at 13:31:37 after passed 2m the registered speed was 6 km/h, at 13:31:38 after passed 7m the speed was 8 km/h, at 13:31:39 after passed 7m the registered speed was 10 km/h, at 13:31:40 after passed 10m the registered speed was 12 km/h, at 13:31:42 after passed 18m the registered speed was 15 km/h, at 13:31:44 after passed 28 m the registered speed was 17 km/h. After that, the locomotive is moving at a constant speed 17 km/h up until 13:31:57, when after passed 89 m it begins to slow down, so that at 13:32:06, after passed 107 m it came to stopping of the locomotive. After that, at 13:32:10 the locomotive is restarted, at 13:32:12 after passed 110 m it gains the speed of 4 km/h, after which it constantly moves with the speed of 4 km/h up until 13:32:17 when it begins to slow down, so that at 13:32:20, after passed 116 m it came to stopping of the locomotive.

3.5. Traffic regulation and management

3.5.1. Actions taken by the staff that regulates and manages the traffic and signaling

Shunting workers (the train driver and the shunter) have received verbally all the orders for the shunting from direct superiors (traction supervisor and train dispatcher). There is no written record of the shunting in the records kept in the Obrenovac station, since it is a usual shunting tasks for which no written orders are required.

3.5.2. Voice messages exchange regarding the accident

Immediately prior to and during the occurrence of the respective serious accident, there was no communication between the train driver and the shunter.

Communication between the train driver and the shunter is achieved after the occurrence of the respective serious accident.

3.5.3. Measures taken to protect and secure the accident site

After the occurrence of the respective serious accident loc. CEM-7 was not moved from the place where it stopped after the executed shunting drive.

Other measures to secure the accident site were not undertaken.



3.6. Interface between people, machines and the organization

3.6.1. Working hours of the staff involved

For the train driver of locomotive CEM-7 from the JP "EPS" branch TENT from Obrenovac, data have been submitted showing that he had the legally stipulated rest before coming to work and that on work he did not spend more time than the maximum specified by Law.

For the shunter from "Pro Tent" d.o.o data have been submitted that show that he had the legally stipulated rest before coming to work and that on work he did not spend more time than the maximum specified by Law.

For other participants of the serious accident, employed at JP "EPS" branch TENT from Obrenovac data have been submitted that show that they had the legally stipulated rest before coming to work and that on work he did not spend more time than the maximum specified by Law.

For deputy manager (deceased worker) from "Inter-Mehanika" d.o.o. from Skorenovac data have been submitted that show that he had the legally stipulated rest before coming to work and that on work he did not spend more time than the maximum specified by Law.

For other participants of the serious accident, employed at "Inter-Mehanika" d.o.o. from Skorenovac data have been submitted that show that they had the legally stipulated rest before coming to work and that on work he did not spend more time than the maximum specified by Law.

3.6.2. Health and personal circumstances that have an effect on the accident, including the physical and psychological stress

For the railway staff data have been submitted that show that the train driver of the locomotive CEM-7 and the shunter that were in service at the time of occurrence of the respective serious accident were professionally trained and medically fit to conduct the service.

For workers of "Inter-Mehanika" d.o.o. from Skorenovac that were executing the tasks of installment of the derailment detectors at the time of the serious accident, data have been submitted that show that they were professionally trained and medically fit to conduct the service.

The representatives of the Service BZR and ZOP and the Security Service of JP "EPS" branch TENT from Obrenovac have, by order of the Operating engineer of 13.04.2018. at 14:35 executed the alco testing of the train driver and the shunter, participants of the respective serious accident. Alcotesting was done by ethilometar of the manufacturer Dräger Safety Lubeck-Germany, model Alcotest 6810, serial No. ARED-0162, for which from the Directorate for measures and precious metals Certificate of verification of the measurment No. 393-3/7-01-2771/12 from 12.07.2017. has been delivered.

By alcotesting the train driver and the shunter the absence of alcohol was determined.

At deceased worker of "Inter-Mehanika" d.o.o. frm Skorenovac by toxicological analysis T-477/18 done during the autopsy (Autopsy Record S-0444/2018 of 17.05.2018.) ethyl alcohol, methyl alcohol, and acetone were not detected.



3.6.3. Design of the equipment that has an effect on the interface between the user and the machine

Managing the CEM-7 locomotive is carried out by a train driver from the driver's cab via commands designed upon manufacturing of the locomotive. At loc. CEM-7 all detected lacks on the systems and managing devices have been removed, so that any complaints or lacks have been registered. The arrangement of commands of the driver's cab of loc. CEM-7 is such that it is predicted to be used by one train driver.

3.7. Previous accidents of the similar character

Based on the data submitted by JP "EPS" branch TENT from Obrenovac for the period from 01.01.2008. to 13.04.2018., on the industrial railway TENT from Obrenovac, it came to occurrence of the two (2) accidents, overtakings of the railway vehicles on the worker. Review of the occurred accidents is given in Table No. 3.7.1.

Table No. 3.7.1.: Review of accident occurred in the period from 01.01.2008. to 13.04.2018.

Serial No.	date	time	Short description	cause
1	22.06.2010.	23:29	At the Obrenovac unloading station, on the second track at km 0+520, upon driving a locomotive 443-05 tha was moving from the OB2 station building in the direction towards the open track, there was an injury of the wagon examiner.	Holding the wagon examiner on the second track at the time of approaching of the locomotive for unspecified reasons.
2	20.03.2012.	10:44	At the loading station Tamnava, when moving the empty set on the first track, with shunting driving by pushing with the loc.443-07, it came to fatal injuries of the shunter.	Clutching of the locomotive and the wagon during the movement of the pushed shunting composition.

In the listed accidents, one person died (the shunter) and one person was seriously injured (the wagon examiner).

4. Analyses and conclusions

4.1. Final review of the sequence of events and making conclusions on the event based on the facts determined during the investigation and interviews

In the period from 26.03.2018. to 13.04.2018. on the industrial railway JP “EPS” branch TENT from Obrenovac on the depot area at the station Obrenovac, on the tracks 11d and 12d the workers of “Intermehanika” d.o.o. from Skorenovac executed the tasks of installment of the derailment detectors on twenty wagons of the series Faboo, according to the signed contract. Immediately before the accident at the track 11d the check of executed works was done, and alongwith that activity, the workers of “Inter-Mehanika“ d.o.o. from Skorenovac: locksmith of II group and welder were finishing installment of tubes for connecting derailment detectors. The check of executed works was done by a group of three workers, one of which was the worker of “Intermehanika” d.o.o. from Skorenovac (deceased worker) and two from JP “EPS” branch TENT, Obrenovac.

In the immediate vicinity of the 11d track, where there was a group of workers, two locomotives were located on the paved part of the track 10d, looking from the hall of the depot, the first was the locomotive of the series 443-10 and the second was the locomotive of the CEM-7 series immediately next to it, mutually unclutched. The CEM-7 locomotive was 15 m from the end of the paved part, with a shorter part in the direction of movement. It was operated by a train driver employed at JP "EPS" Belgrade, branch TENT from Obrenovac. The train driver started the locomotive, preparing to drive along that track.

Between tracks 10d and 11d, a signal mark 215 was set: "Loops in the free profile."

The operation and behavior of the group of workers was affected by the noise from the operation of the locomotive CEM-7 after the start (work without moving), as well as the absence of a clearly announced warning that a shunting drive would be undertaken near their works (but on the track 10d). Based on the statement of the train driver, who was in charge of and started the locomotive CEM-7, he received a verbal order from the locomotive supervisor to perform the extraction of two operating locomotives from the track 8d. Based on the shunter statement, he received a verbal order from the train dispatcher to perform shuntings. On the basis of the order received, the shunter first headed in the direction of the switch No. 10d of the depot.

After the preparations for the departure (warming up of the locomotive and the achievement of the working pressure of the air), the train driver, according to his own statement, by looking found out that all the switches were placed in the position for the intended drive and that there was no one on the track 10d, and began moving the locomotive.

During the CEM-7 locomotive drive, a deputy manager (a deceased worker) was taken out of the group of workers and entered the profile of the 10d track to drink water from a plastic bottle (according to individual workers' statements). Although they could not with certainty assess the distance of the site of the injured worker from the encountering locomotive CEM-7, they were sure that it was in the track 10d. On that occasion, a locomotive overtook him. After driving on the track 10d to the switch No. 10d, the train driver learned from a shunter and another train driver that in the track 10d stayed a runover man.

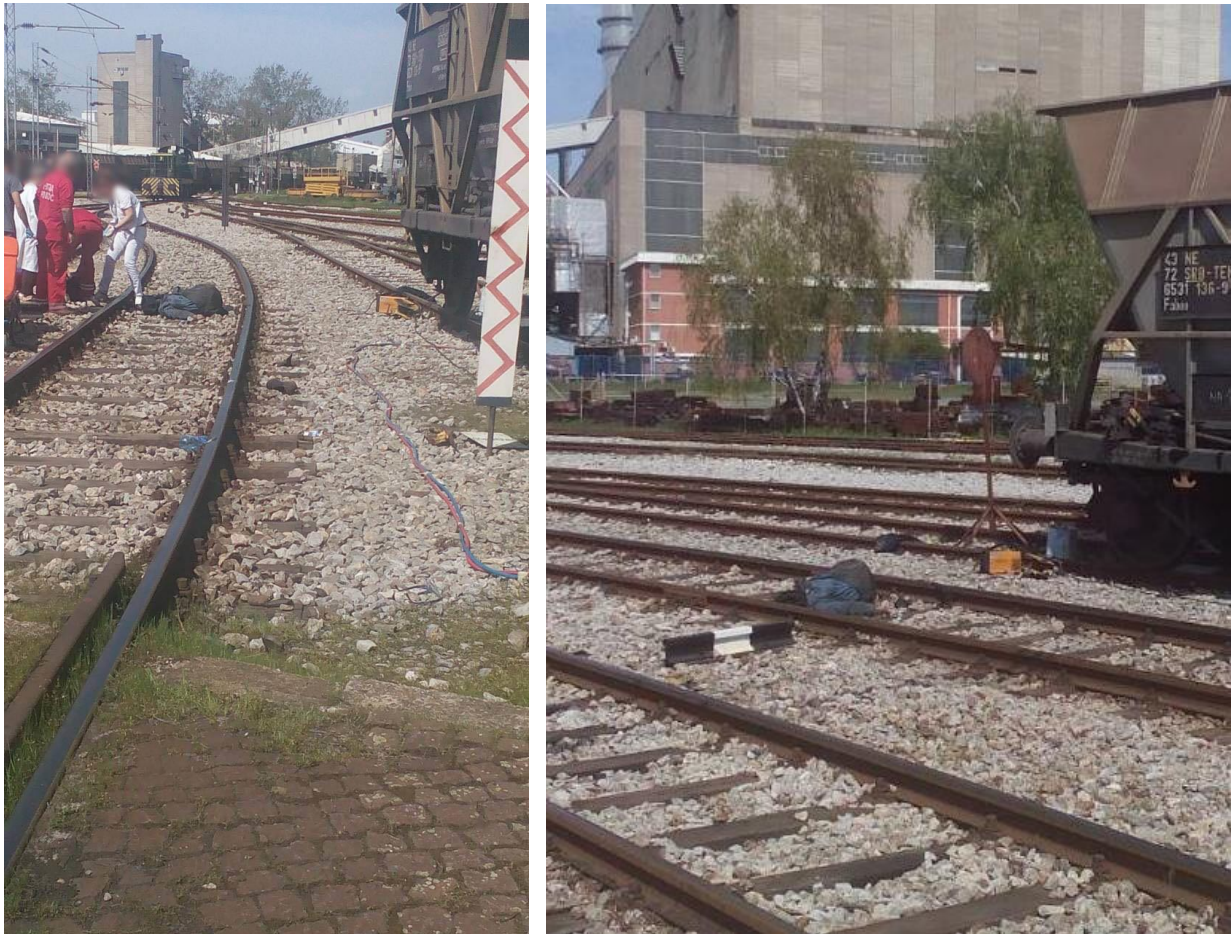


Figure 4.1.1: The appearance of the accident site where the deceased worker was found (source: TENT)

On the basis of photo documentation (source: TENT), the deceased worker was found at track 10d after a serious accident, at a distance which corresponds to the place between the 16th and the 17th sleeper from the end of the paved part of the track (Figure 4.1.1.).

4.2. Reconstruction of the serious accident

4.2.1. General data

In the course of the investigation of the serious serious accident, in order to examine all possible effects on the occurrence of a serious accident, on 18.04.2018. in the area of JP "EPS" branch TENT from Obrenovac, reconstruction of a serious accident was carried out under conditions that were identical to conditions at the time of a serious accident. Weather conditions were not identical. At the time of reconstruction, the weather was cloudy and occasionally it was raining. The air temperature was 17°C. There was no fog. Visibility was good. Weather conditions at the time of reconstruction did not have any impact on visibility.

For the purpose of reconstruction, the same shunting locomotive CEM-7 was provided as well as the one used at the time of a serious accident.



Before the commencement of the reconstruction, the locomotive CEM-7 was placed on the track 10d of depot, in the same place and in the same way (shorter part towards the switch) the same before the occurrence of a serious accident.

At the time of reconstruction, on the track 10d there was no locomotive 443-10 which at the time of a serious accident was located on the paved part of the track 10d immediately next to the locomotive CEM-7, closer to the depot's hall. This situation did not affect the reconstruction.

A series of 6 (six) wagons of the Faboo series that were on the day of a serious accident on the track 11d pulled for the needs of the works, and on the track 11d a series of 6 (six) wagons of the same series was placed in the same place and in the same way as before the occurrence of a serious accident.

In addition to the CINS Working Group, the reconstruction participated also all the involved (except the deceased worker) in the serious accident that occurred, representatives of JP "EPS" branch TENT from Obrenovac, representatives of "Inter-Mehanika" d.o.o. from Skorenovac and Deputy Public Prosecutor from the Public Prosecutor's Office in Obrenovac.

Reconstruction was done in two parts. In the first part, the visibility (transparency) was examined from the place where the train driver was in the drivers cab of the loc. CEM-7 and the visibility (transparency) from where the shunter was to be located, while in the second part shunting movement was conducted under identical conditions as at the time of the occurrence of a serious accident.

During the reconstruction, the existence of a certain noise level was observed from the work of the surrounding thermoenergy plants. The dominant noise level originated from locomotive CEM-7 operation. When operating the CEM-7 locomotive, the noise level is common for this type of rail vehicle. The impact of the noise from the operation of locomotive CEM-7 was mentioned by the employees in their statements.

4.2.2. Visibility from the driver's cab of the locomotive CEM-7 and from the position of shunter

Considering the fact that the route of the intended shunting movement from the track 10d to the switch No. 10d is in the left curve, the train driver, before beginning of moving the shunting locomotive CEM-7, occupied a position on the left side of the driver's cab, looking in the direction of the intended movement. The appearance of this part of the driver's cab is shown in Figure 4.2.2.1.



Figure 4.2.2.1: The appearance of the part of the driver's cab of the locomotive CEM-7

From the locomotive cab position where the train driver was located (on the left, in the direction of the intended movement), the train driver had the opportunity to observe the driving route through the front window on the driver's cab and through the side window on the driver's cab.

When, looking in the direction of the intended shunting movement, a position is taken on the left side of the driver's cab behind the counter with locomotive controls, a look through the front window on the locomotive driver's cab (Figure 4.2.2.2), you can see the track 10d in the length of about 20 m, part of the track 11d and part of the last wagons that were on the track 11d. The entire route of the planned shunting movement and the place where the locomotive CEM-7 (the place behind the switch No. 10d) should be stopped after the shunting movement, ie the place where the shunter was to be located, can not be seen through the front window. Persons standing on the right track of the track 10d and located at a distance of less than 5.9 m from the buffer of the locomotive CEM-7 can not be spotted. Also, looking from the intended shunting movement, all the persons standing right from the line that goes through the center where the train driver and the point on the right rail at a distance of 5.9 m from the buffer, from the place where the train driver was, by looking of the front window it cannot be spotted.

When, looking in the direction of the intended shunting movement, a seat on the left side of the steering column behind the counter with locomotive controls is used, so that the head is put through the side window, looking through the side window at the locomotive driver's cab (Figure 4.2.2.3.) you can see the entire shunting route and the place where the locomotive CEM-7 (place

behind the turning point number 10d) should be stopped after the shunting-movement, that is, the place where the shunter was to be located, part of the track 11d and part of the last wagon was on track 11d. Looking through the side window it is not possible to spot people standing on the right track of the track 10d and located at a distance less than 8 m from the locomotive CEM-7 locomotive (at a distance of less than 11.3 m from the side window from which the observation was carried out). Also, in the direction of the planned shunting movement, all the persons who are standing to the right of the line passing through the point where the train driver and the point on the right track are located 8 m from the locomotive buffer from the place where the train driver was located, through the side window it can not be spotted.

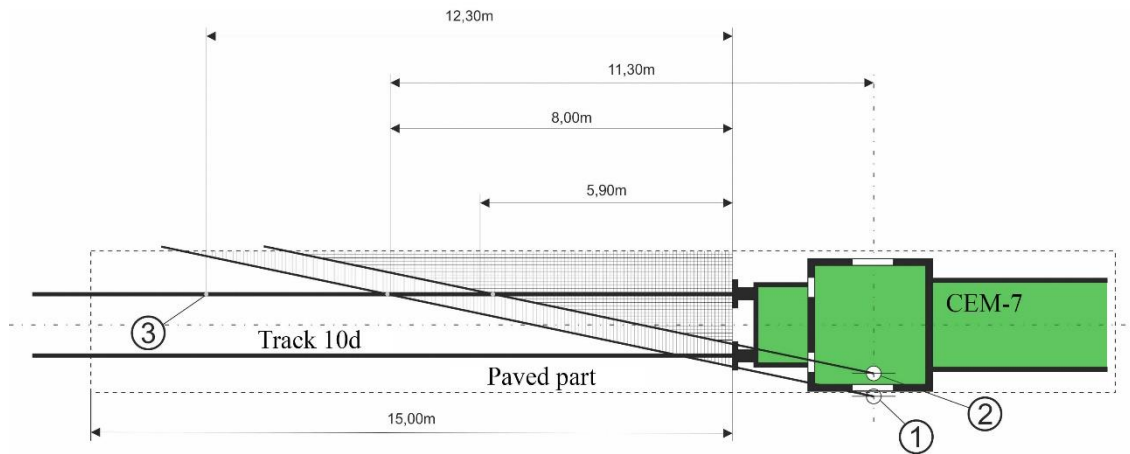


Figure 4.2.2.2: View from the left front window



Figure 4.2.2.3: View from the left side window

The sketch of visibility from the locomotive CEM-7 from the position of the train driver determined during the reconstruction is shown in Figure 4.2.2.4.



- 1 - position (aspect) of the train driver with head through the side window
- 2 - position (aspect) of the train driver when the head is not shoved through the window
- 3 - the place where (probably) was the deceased worker at the moment of overtaking of the locomotive CEM-7

Figure 4.2.2.4: Schematic review of the area of visibility for the train driver from the position of starting the locomotive CEM-7

From the place where the shunter was supposed to be located (in the area of the switch No. 10d at the switch device), one can clearly see the entire shunting route, the window of CEM-7 locomotive window on the side of the train driver, the wagon that was on track 11d and all persons who were in the area between tracks 10d and 11d in front of the locomotive, as viewed in the planned shunting movement. The space at the right part of the locomotive, as viewed in the direction of the planned shunting movement, from the point where the shunter should be (in the area of the switch No. 10d at the switch device) cannot be completely seen.



Figure 4.2.2.4: The view from the position of the shunter



4.2.3. Shunting movement of the locomotive CEM-7

In this part of the reconstruction, one shunting movement was made, similar to the one that was done at the time of occurrence of the respective accident.

From the train driver's perspective, before starting and during the shunting movement, until the locomotive stops behind the switch No. 10d, you can see the shunter all the time, and you can see the manual aspects of a signal that the shunter may indicate. Before starting and during the shunting movement, the train driver, from his position (shoved head through the side window on the left side of the driver's cab) is able to fully see the space on the left side of the locomotive, while the space directly in front of the locomotive and on the right side of the locomotive, viewed in the direction of movement, is impossible to be fully seen.

From the perspective of the shunter, the movement of the CEM-7 shunting locomotive can be clearly seen in a complete shunting route. Also, before starting and during shunting movement, from the position of the shunter, the window from which the train driver could observe the driving route and the entire space on the left side of the locomotive can be seen all the time, as well as the space on the right side of the locomotive in front of the locomotive, in the direction of movement.

The locomotive, viewed in the direction of movement, was turned with the shorter part ahead with respect to the position of the driver's cab.

4.3. Analyses of facts determined during the investigation

4.3.1. Work tasks

According to the Work Contract No. 168-1/18 from 01.03.2018., from the employer "Inter-Mehanika" d.o.o. from Skorenovac the locksmith of II group (deceased worker) had the following job description:

1. Job description

...

- if necessary, operates a control panel for the elevating device of the rolling stock and participates in shuntings, of railway rolling stock (wagons, locomotives, motor rail cars) on an industrial track,
- if necessary, performs welding jobs

...

- He works on site works from his field,
- Respects the measures of BZR, HTZ and PPZ,
- Performs other works and tasks obtained from the direct manager, in accordance with their professional qualifications and ability.

By Decision No. 010/18 "Inter-Mehanika" d.o.o. from Skorenovac from 13.03.2018., the locksmith of II group (deceased worker) was sent to terrain at Obrenovac, on the construction site JP "EPS" branch TENT from Obrenovac, on the works of installment of derailment detectors on the wagons of series Faboo by the Contract No. 105.E.0301-19595/5-2018 from 01.02.2018. By the same Decision, upon Point 2, the same worker shall perform the tasks of deputy manager of the construction site.



On the day of the occurrence of a serious accident, the employee of "Inter-Mehanika" d.o.o. from Skorenovac, a deceased worker was engaged with other workers on the installation of derailment detectors on the wagons of Faboo series on the track 11d and prepared wagons for handing over the works to the representatives of the JP "EPS" branch TENT from Obrenovac (letter No. 192/18-3 "Inter-Mechanika" d.o.o. from Skorenovac from 05.06.2018).

For deceased worker, worker from "Inter-Mehanika" d.o.o. from Skorenovac a form - a table with his signature and data: 20.03. 2018, the date of his training BZR (Form 6), 20.03. 2018. the date on which he was familiarized with the Elaboration on the construction of the site, the works on the installation of derailment detectors No.088/18 of 13.03.2018 and BZR Rules in JP "EPS" Branch TENT from Obrenovac and 21.03. 2018., the date when he performed the medical examination, was submitted.

The deceased worker signed the Minutes of the training on safety measures and environmental protection measures (Form QO.0.14.63 JP "EPS", branch TENT from Obrenovac). The form QO.0.14.63 was prescribed within the procedure QP.0.14.05 of 22.01.2018., edition No. 10, which predicts the training of familiarization, but does not specify the content of the training program.

A deceased worker of "Inter-Mehanika" d.o.o. from Skorenovac worked at a workplace with an increased risk. According to the Act Amending and Supplementing the Act on Risk Assessment in Workplaces and in the Work Area of the Plant "Stara železara", registered with "Inter-Mehanika" d.o.o. from Skorenovac under the No. 02-13/2015 from 10.03.2015. and Amendments to the Risk Assessment Act for the workplaces represented at the construction site of the installment of derailment detectors in TENT (whose work started on 15.03.2018. by Decision on initiating the procedure for supplementing the Risk Assessment Act for the workplaces represented at the site of TENT Obrenovac of the director of "Inter-Mehanika" d.o.o. from Skorenovac, with the deadline until 19.03.2018), locksmith II and manager are workplaces with increased risk.

For deceased worker, worker from JP "EPS" branch TENT from Obrenovac a form - a table with his signature and data: 22.03. 2018, the date of his training BZR (Form 6), 22.03. 2018. the date on which he was familiarized with the Elaboration on the construction of the site, the works on the installation of derailment detectors No.088/18 of 13.03.2018 and BZR Rules in JP "EPS" Branch TENT from Obrenovac and 21.03. 2018., the date when he performed the medical examination, was submitted.

For the deceased worker from "Inter-Mehanika" d.o.o. from Skorenovac, a Chart of indebtedness with his signature was submitted, from which it can be seen that in the period from 23.03. 2017. to 23.03.2018. he did not borrow a fluorescent vest.

According to the Contract No. 4398/2 dated 16.01.2007., by the employer of JP "EPS" branch of TENT from Obrenovac, the train driver had the following job description:

The train driver of diesel or electric traction vehicles will perform tasks that consist of the following:

...

applies the provisions of the Law on Railway, regulations and instructions in this area and adheres to other traffic safety regulations and regulations, while respecting standardized procedures in operation, ...

...



cooperates in the performance of his job: with TK Dispatcher, train dispatchers, car examiners, locomotive supervisor, ...

...

To perform the work of his job, he answers to: the locomotive supervisor, ...

Executes all other tasks from the scope of his work by the order of the superiors corresponding to his/her workplace, in accordance with the provisions of the Labor Law and other regulations...

According to the Labour Contract No. 6389/06 of 07.12.2006. and Annex of the Labor Contract No. 3354/12 of 27.01.2012., by the employer "Pro Tent" d.o.o. from Obrenovac, the shunter had the following job description:

- Conducts shunting of the railway vehicles, declutches and unclutches the wagons and locomotive,
- Handles the switch from the local set or on site,
- Provides the shunting routes,

...

By order of the authorized person, the employee conducts other tasks which correspond to his education.

For his work an employee answers to the direct superior within the organizational part of the traffic service.

The tasks and duties of the train driver and shunter are defined through the Business order of the Obrenovac station No. 32063/1 of 21.10.2010. (see point 3.3.2.). These duties, that is, tasks, are not in contradiction with the Labour Contracts of the train driver and shunter. In the worksheet (TENT Form) for date 13.04.2018. under the serial No. 19, a CEM-7 train driver was enrolled.

4.3.2. Analysis of the shunting drive

Due to the need to pull out two locomotives from the depot hall from the track 8d, the locomotive supervisor instructed the train driver to operate the locomotive CEM-7 which was located on the track 10d and requested shunting in the depot area to the train dispatcher of the station Obrenovac.

Train dispatcher of the station Obrenovac has, on request of the traction supervisor, given the order to the shunter to go to the depot area to make a shunting to pull out two locomotives from the depot hall.

Given the fact that it is a usual shunting task for which no written orders are needed to be delivered, all the orders were given verbally.

The train driver operated the locomotive CEM-7 which was at a hall depot of the station Obrenovac at the track 10d. Since the loc. CEM-7 had been driven that day, the train driver had no need to make a daily check of the locomotive, but he started it and let it work from its place for a period, so that the locomotive could achieve the work temperature and pressure of the air in the braking installations.

After achieving the work pressure in the air braking installation, the train driver had moved the locomotive and conducted the shunting drive along the track 10d in the direction to the switch 10d and stopped after the switch 10d.



During the start of driving of the locomotive, or when starting a shunting drive, the shunter still did not arrive at the depot area to participate in the shunting work.

The train driver started the loc. without the shunting operator giving the aspect of a signal "Forward", which is in contradiction with the provisions from part B, Point 9 Paragraph 4 of the Business order of the station Obrenovac No. 32063/1 of 21.10.2010.

The train driver stated that nobody told him that the workers are making works on the track 11d, he took a look at the driving route and noticed nobody on the track, he noticed that the switches were in right position for the intended route, and started driving the locomotive in the same way without special order from anyone, but with giving the aspect of a signal "Watch out", that it was sunny, the full Sun was shining towards him from the left part in the direction of movement, and disturbed a lot.

Prior to the start of the locomotive, the train driver did not give the aspect of a signal "Watch out" and did not repeat it during the shunting drive (the use of siren was not registered in the registering speeding CEM-7 locomotive device from the moment of log in of the train driver and immediately before starting and during the shunting drive, which is in contradiction with the provisions of Article 29, part B, Point 11 under a) and lj) of the Rulebook 1, Signalling Rulebook ("Official Gazette ZJŽ" No. 4/96, 5/96 and 1/97). The register speeding device registered speeding of the locomotive up to 17 km/h at length of 28 m, then the constant speed of 17 km/h was used at length of 61 m, after which slowing down was registered at length of 18 m, after which the locomotive stopped. After 4 s from stopping the restart of locomotive was registered at length of 9 m with maximum speed of 4 km/h. According to provisions from part B, Point 15, Paragraph 4 of the Business order of Obrenovac station No. 32063/1 of 21.10.2010., the maximum allowed speed on the work of shunting in the depot area are 5 km/h on the paved part, and 10 km/h on the unpaved part. From the abovementioned it can be stated that the train driver had exceeded the maximum speeds on the paved (at a distance of 7 m from starting, the speed of locomotive was 10 km/h, and locomotive was standing on 15 m from the paved part of the track 10d) and in the unpaved part of track 10d.

At the time when the shunter arrived at the depot area (based on statements by shunter and train driver), the CEM-7 locomotive stood behind the switch No. 10d, looking in the direction of the depot hall. Shunter, at the request of a train driver, was handling the switch No. 10d for the purpose of forming a shunting route on the track 8d. At that point, train driver and shunter came to the knowledge (from another train driver who approached them) that a serious accident had occurred.

Aspect of a signal "Watch out" certain employees of the group of workers did not hear (according to their statements), which was confirmed by analyses of the record of the speeding device.

Inexplicable and uncaredful was the act of the deceased worker who separated from the group of workers from track 11d and came in the profile of the track 10d, where (according to the statements of certain workers) he was standing backwards to the approaching locomotive CEM-7 and started to drink water from the plastic bottle.

The position of the deceased worker at the point of overtaking of the loc. CEM-7 cannot be exactly determined due to contrary statements of group of workers who were at the accident site.



4.3.3. Analyses of the works conducted on the installation of detectors of derailment

“Inter-Mehanika” d.o.o. from Skorenovac has delivered to Labour Inspectorate Commencement of Works Application No. 088/18 of 13.03.2018. in which the data for the works manager. The works manager was the person at the work position work manager-locksmith in “Inter-Mehanika” d.o.o. from Skorenovac. That person was not present on 13.04.2018. so he was replaced by the deceased worker by Decision No. 010/18 of “Inter-Mehanika” d.o.o. from Skorenovac of 13.03.2018.

According to Service Agreement T-ZT, with Annex 4 Rulebook on Safety at work, which in JP “EPS”, branch TENT is registered under No. 105.0.03.01.-19595/5-2018 of 01.02.2018., and in “Inter-Mehanika” d.o.o. from Skorenovac is registered under No. 019/18 of 09.02.2018., in Part I Obligations of the service provider, under 3 appoints the person responsible for health and safety at work, that will be available all the time during the execution of works, and his deputy (in the absence of person for BZR in the second/third shift, on holiday, etc.) which in the abovementioned case was done by “Inter-Mehanika” d.o.o. from Skorenovac by Decision No. 008/18 of 13.03.2018.

According to the Article 9 of Regulation of health and safety at work on temporary and mobile construction sites (“Official Gazette RS”, No. 14/2009 and 95/2010) the investor is obliged to conduct the Application of construction site on the form in Annex 3 “Application of Construction Site” (see Point 3.3.9). In the form “Application of Construction Site” there is a column “coordinator for execution of works” JP “EPS” branch TENT from Obrenovac did not submit the form “Application of Construction Site”, so in that sense, the coordinator for works execution has not been appointed. Also, in the Elaboration on arrangement of construction site on installment of derailment detectors No. 088/18 of 13.03.2018. “Inter-Mehanika” d.o.o. from Skorenovac has in Part II Description of works states that TENT will determine the person for coordination, supervision and handing over of certain works. The absence of coordinator for works execution by JP “EPS” branch TENT from Obrenovac in this case had an effect that the executors of work tasks of “Inter-Mehanika” d.o.o. from Skorenovac (among whom is the deceased worker) have not been timely informed on planned manueuvring drive with locomotive CEM-7.

Before the commencement of works on this construction site, “Inter-Mehanika” d.o.o. from Skorenovac and JP “EPS” branch TENT from Obrenovac had not been the subject of regular supervisions of competent inspectorates in the last two years. “Inter-Mehanika” d.o.o. from Skorenovac was not the subject of supervision upon works Application which it had done before the commencement of works.

4.3.4. Review of locomotive and locomotive maintenance documentation

Based on data delivered by JP “EPS” branch TENT from Obrenovac (see point 3.4.4.), locomotive CEM-7 was regularly maintained and checked and on the locomotive any lacks have not been noticed, which could affect the occurrence of the respective serious accident.

4.3.5. Inspection

Based on Law on Investigation of Accidents in Air, Rail and Water Traffic (“Official Gazette RS” No. 66/15 and 83/18), CINS by Letter 021 No. 340-00-1/2018-02-1-6 of 27.04.2018. contacted the Ministry of Labor, Employment, Veterans' Affairs and Social Affairs, the Labor



Inspectorate for the city of Belgrade, with a request to submit a Minutes on the control of injury at work with fatal outcome, Minutes of the hearing of the direct participants and witnesses of this serious accident and data on regular inspection controls at JP "EPS" Branch of TENT from Obrenovac and "Inter Mehanika" d.o.o. from Skorenovac and data on what kind of control is in question.

In response to a request from the CINS, the Labor Inspectorate, and the Labor Inspectorate I Department for the City of Belgrade, by letter No. 163-00-26/2018-04 of 26.07.2018. it submitted the Minutes on the performed control No. 163-00-26/2018-04 of 18.06.2018. conducted for heavy injury with fatal outcome with respective annexes and informed CINS that in records of Labour Inspectorate there is no data that in JP "EPS" TENT branch from Obrenovac there were any regular controls in the last two years, the employer of "Inter-Mehanika" d.o.o from Skorenovac was the subject of regular supervision of the local labor inspectorate in Smederevo, where the head office of the employer is located. The employer of "Inter-Mehanika" d.o.o from Skorenovac was not the subject of supervision upon works Application which it conducted before the commencement of works on the abovementioned construction site. Employers who perform works on the construction sites for the needs of JP "EPS" branch TENT from Obrenovac regularly report the beginning of works and they have been subjects of extraordinary inspections in accordance with the dynamics, plan and work program of the Labor Inspectorate.

4.3.6. Influence of the weather situation and conditions of visibility

By Letter No. 925-1-18/2018 of 30.01.2019. of The Republic Hydrometeorological Institute a report on the weather situation in the area of Obrenovac for 13.04. 2018. in the period from 13:00 to 14:00 was submitted. The weather information is shown in Table 4.3.6.1.

Table 4.3.6.1: Weather situation data

time	T (°C)	Vid (km)	V _{max} (m/s)	intensity	direction
13:00	23.3	20	5.5-7.9	mild	W
14:00	23.8	20	5.5-7.9	mild	NW

T - air temperature

Vid - meteorological visibility (is the breathability of the atmosphere expressed at the maximum distance at which the normal vision sight observer can identified familiar objects in the environment, during observation in the day, and the light sources during observation at night).

V_{max} - maximum wind speed in the previous hour.

Смеп - predominant wind direction in the previous hour.

Condition of the soil between 13:00 and 14:00 was dry.

By letter No. 44/1 dated 29.01. 2019. Astronomical Observatory in Belgrade, a report on visibility conditions in astronomical terms was submitted for 13.04.2018. at 13:30, when this serious accident happened. Data on visibility conditions in the astronomical sense are shown in Table 4.3.6.2.

Table 4.3.6.2: Data on visibility condition in astronomical terms

Data type	Value
Geographic width of the place	44° 40' 09.7" <i>N</i>
Geographic length of the place	20° 09' 25.7" <i>E</i>
The Sun rising	05:59
The Sun setting (beginning of the civil dawn)	19:22
Height of the Sun 13:30	52.85°
Sun direction at 13:30	200.76° <i>E</i>
Illumination at 13:30	92 358 <i>lux</i>

The illumination of the horizontal surface on the Earth that originates from the scattered sunlight in the atmosphere for 13.04.2018. at 13:30 it was 92 358 lux, for a completely sunny day (without fog) and with maximum meteorological visibility. The maximum illumination of the horizontal surface on Earth by the Sun for the given location, which occurred on 21.06.2018. amounted to 113 197 lux.

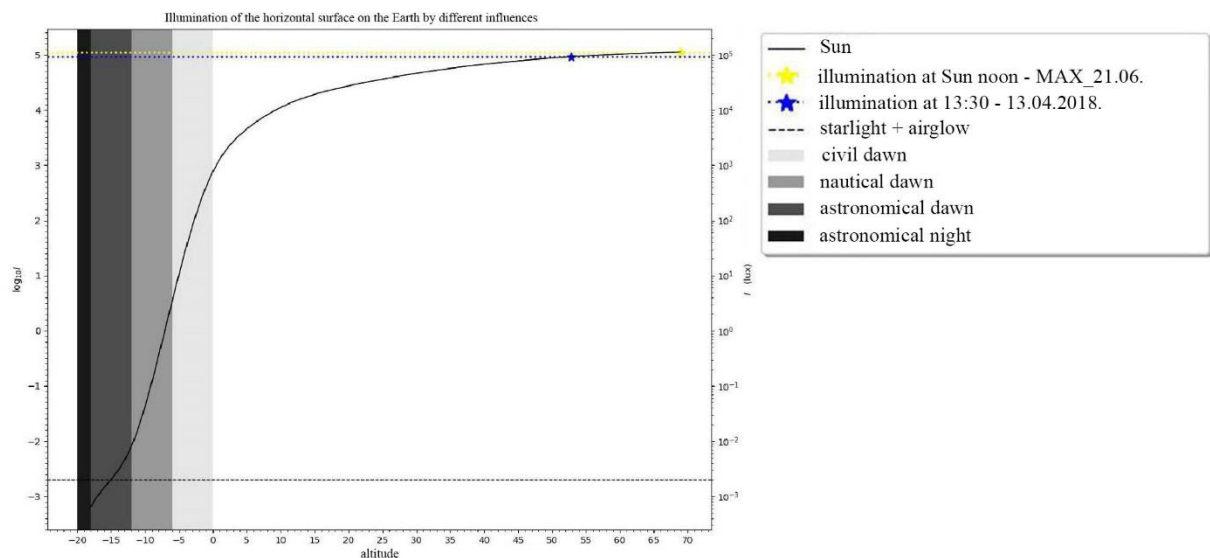


Figure 4.3.6.1: Complete diagram of illumination for a given location 13.04.2018.

Position of the Sun on 13.04.2018. at 13:30 was: the height of the Sun (elevation) 52.85 ° from the mathematical horizon, the direction of the Sun (azimuth) 200.76 ° measured east.

The position of the Sun, more precisely the direction, for the respective location and at the time of occurrence of a serious accident, is presented in Figure 4.3.6.2.

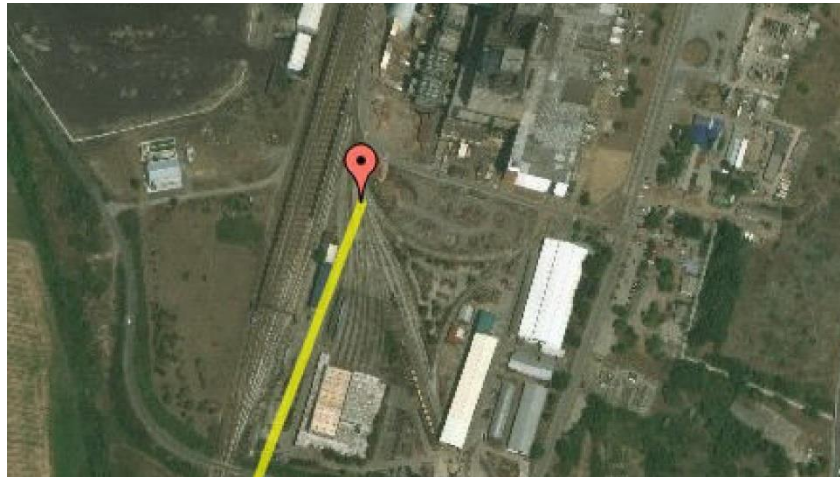


Figure 4.3.6.2: Complete diagram of illumination for a given location on 13.04.2018.

For the position of the Sun, the angle at which the Sun can be seen from the respective location for 13.04.2018. at 13:30 is important, there is no natural object (forest, hill) in the respective location, which would create a shadow large enough to cover the location in question, as can be seen from the geographical map for the location in question in Figure 4.3.6.3.

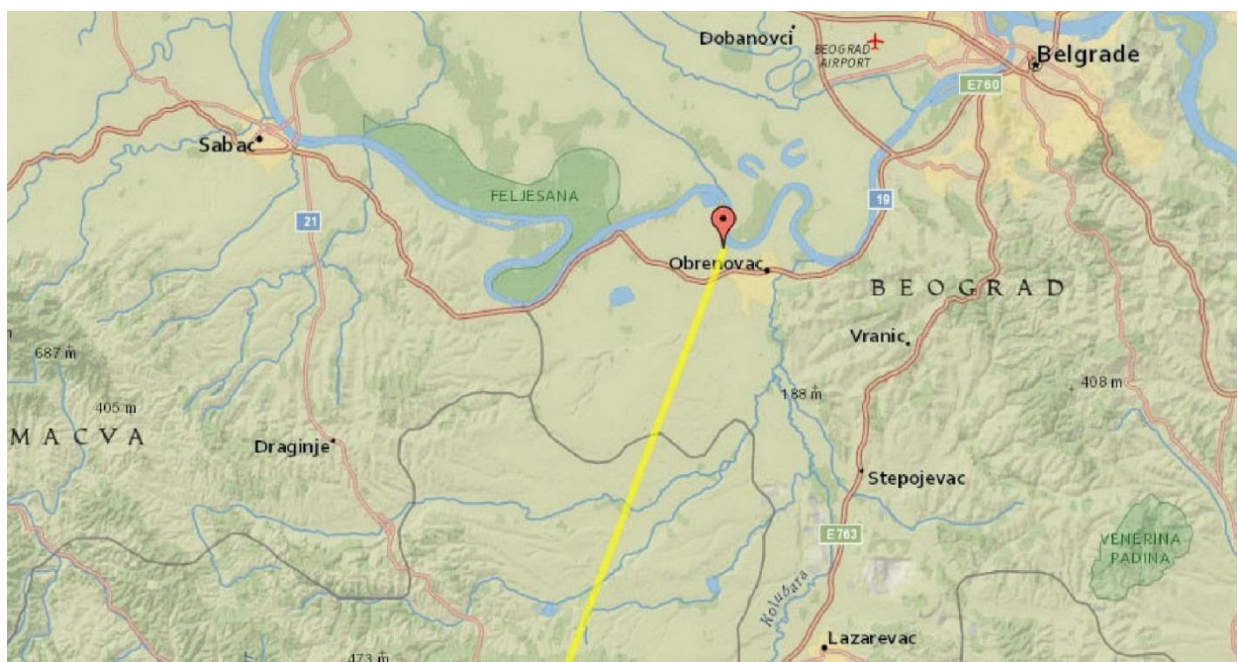


Figure 4.3.6.3: A geographical map of a wider area around the respective location with the drawn direction of the Sun on 13.04.2018. at 13:30

On the site there are no facilities (buildings) that could have a sufficiently long shadow that could cover the site in question.

Albedo, i.e. the measure of diffuse reflection of solar radiation, for concrete, is larger than the albedo for the grass surface. In this serious accident, the locomotive CEM-7 was located on a section of track paved concrete.

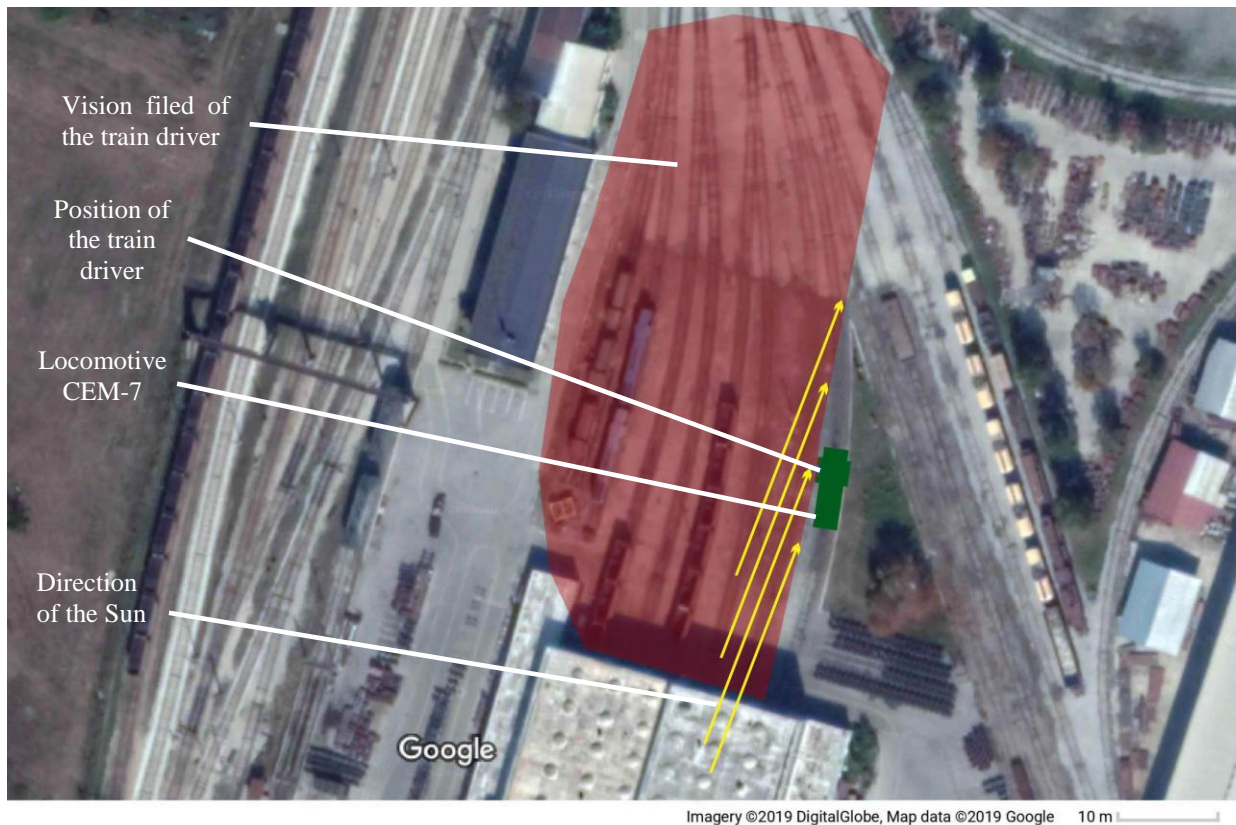


Figure 4.3.6.4: The direction of the Sun relative to the aspect of the train driver

Based on the weather and visibility data, it can be concluded that the weather conditions could have affected the operation and behavior of all participants in the respective serious accident.

4.4. Conclusions

4.4.1. Direct cause of the accident

Direct cause of the occurrence of the srious accident is the fact that the worker was on the track 10d immediately prior to arrival of locomotive CEM-7, which caused the dangerous situation regarding the occurrence of this serious accident.

The deceased worker had the possibility to hear the work of locomotive from the position where the works had been carried out (area between tracks 10d and 11d) and to notice that the locomotive had started, and he was familiar with the conditions of work on the temporary construction site.

On the occurrence of the respective serious accident the following had the influence: 1) lack of notification that shunting drive is in preparation in the vicinity of the construction works 2) non existence of the coordinator for executions of works, 3) the fact that prior to the accident there was a certain and permanent amount of noise from the locomotive CEM-7 that for a certain period of time had been operating without moving in the vicinity of the construction works, 4) the noise of the locomotive at the moment of overtaking due to which the worker could not hear the warnings from the group of workers and 5) weather situation, that is, the influence of the Sun (see the point 4.3.6.)



4.4.2. Basic causes deriving from the skills, procedures and maintenance

The basic cause of this serious accident is noncompliance with the Provisions from the part B, Point 9 Paragraph 4 of the Business order of the station Obrenovac No. 32063/1 from 21.10.2010. The train driver had started the locomotive without giving the aspect of a signal “Forward” by the shunter. Before starting the locomotive, the train driver did not give with a siren an aspect of a signal “Be careful” and did not repeat the aspect of a signal during the shunting drive, which is in collision with the provisions of the Article 29, B, Point 11, under a) and lj) of the Rulebook 1 of the Signalling Rulebook (*“Official Gazette ZJŽ” No. 4/96, 5/96 and 1/97*). During the shunting drive, the train driver had exceeded the maximum speed limit for the paved and unpaved part of the track 10d determined by provisions from the part B, Point 15 of the Paragraph 4 of the Business order of the station Obrenovac No. 32063/1 from 21.10.2010.

The deceased worker, during the execution of works from his professional field on site, did not totally comply with measure BZR, HTZ and PPZ, even though according to the Form 6: Record of workers trained for safe and healthy work (delivered by “Inter-Mehanika” d.o.o. from Skorenovac) was trained for safe and healthy work from theoretical and practical part.

According to the Article 9 of the Regulation on occupational health and safety on temporary and mobile construction sites (*“Official Gazette RS”, No. 14/2009 and 95/2010*), the investor was obliged to execute the application of the construction site on the form in the Annex 3 “Application of the construction site” (see the point 3.3.9.). In the form “Application of the construction site” there is a column “coordinator for execution of works”. JP “EPS”, branch TENT from Obrenovac did not submit the form “Application of the construction site”, so in that sense, the coordinator for execution of works has not been determined. Also, in the Elaboration on the construction site arrangement works on installment of the derailment detectors No. 088/18 from 13.03. 2018., “Inter-Mehanika” d.o.o. from Skorenovac in the part II Description of the works states that TENT will determine the person for coordination, supervision and submission of the executed works. Omission of the appointment of the coordinator for execution of the construction works in this case had a consequence that the executors of the work tasks of “Inter-Mehanika” d.o.o. from Skorenovac (among whom is the deceased worker) were not timely notified on the planned shunting drive of the locomotive CEM-7.

Before the beginning of the works at this construction site, “Inter-Mehanika” d.o.o. from Skorenovac and JP “EPS”, branch TENT from Obrenovac, were not the subject of regular surveillance of competent inspection in the last two years.

4.4.3. Main causes deriving from the conditions determined by the legal framework and application of the safety management system

N/A

4.4.4. Additional remark on lacks and flaws determined during the investigation, but without relevance on conclusions about the causes

N/A.



5. Measures taken

According to the Letter No. 192/18-7 of 05.06.2018., "Inter-Mehanika" d.o.o. from Skorenovac has after the respective serious accident undertaken the following:

- All employees in "Inter-Mehanika" d.o.o. from Skorenovac, direct work executors on the rail tracks or in the direct vicinity of them, are obliged to use complete prescribed protective equipment and protective fluorescent vest for better visibility,
- Ammendment of Act on risk assessment for the work position locksmith II group, No. 02-120/18 of 31.05.2018. was made,
- Training and check of the qualification of the health and safety at work was made.

According to the Letter No. 102.E.03.01.-215404/2 of 31.05.2018 JP "EPS" branch TENT from Obrenovac has undertaken the following:

- Construction site is visibly marked,
- All the executive staff was by information of Director of ŽT familiar with the execution of works on tracks 11d and 12d.

6. Safety recommendations

Aiming to achieve the possible improvement of railway safety and to prevent occurrence of new accidents, CINS issued the following safety recommendations:

JP "EPS" branch TENT from Obrenovac :

SR_08/19 JP "EPS" branch TENT from Obrenovac to conduct the ammendment of the procedure, QP.0.14.05 edition 11 from 25.04.2018., in the part 3.1. General, Paragraph 7 (which in this part is identical to the procedure QP .0.14.05 edition 10 from 22.01.2018., and that was valid at the time of occurrence of the respective serious accident), with detailed content of the description of the procedure regarding the dangers and damages in railway traffic that the instructor for Health and Safety and ZOP from Training Deaprtment or the Person for Health and Safety at TENT or surveillance body uses when he introduces the employees of the contractor of works and predicts the manner of check of the employees of the contractor of works or to create a special procedure that defines this.

SR_09/19 JP "EPS" branch TENT from Obrenovac to align the procedure QP.0.14.05 edition 11 from 25.04.2018. Annex 1 in the part Safety regulations at work in TENT, Paragraph 6, 7 and 8 (which is in that part identical to procedure QP.0.14.05 edition 10 from 22.01.2018., and that was valid at the time of occurrence of the respective serious accident), with the Article 6 of the Regulation on Health and Safety at work on temporary or mobile construction sites ("*Official Gazette RS*" 14/2009 and 95/2010) with the aim of appointing the coordinator for execution of works.



SR_10/19 JP “EPS“ branch TENT from Obrenovac to conduct additional training of high quality of the staff that participates in carrying out the shunting drives with the purpose of appropriate application of the railway regulations aiming to prevent occurrence of new similar accidents and improve safety in the railway traffic.

“Inter-Mehanika“d.o.o. from Skorenovac:

SR_11/19 “Inter-Mehanika“d.o.o. from Skorenovac that in Form 6 of the Records on employees trained for healthy and safe work, for the persons at work position of increased risk (worker-locksmith/II locksmith and manager) in the part of description of the works at that position, beside the anticipated obligations, anticipates the training and check for safe work during execution of works on temporary and mobile construction sites at other employer where in the vicinity of the place of execution of works shunting movements are being carried out.

Ministry of Labor, Employment, Veteran and Social Affairs

SR_12/19 Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate to carry out additional inspection within its competences in terms of fulfillment of conditions under Article 9 of the Regulation on Safety and Health on Temporary or Mobile Construction Sites (*“Official Gazette RS” 14/2009 and 95/2010*), where the investor (JP “EPS” branch TENT from Obrenovac) was obliged to carry out application of the construction site on the form in Annex 3 “Application of the construction site” and appoints the coordinator for execution of works.

SR_13/19 Ministry of Labor, Employment, Veteran and Social Affairs of RS, Labor Inspectorate that upon application of future works by the employer-investor (JP “EPS“ branch TENT from Obrenovac) to carry out the inspection within its authorities, and with the aim of reducing the possible similar accidents.