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**FINAL REPORT**

on

**Technical investigation of railway accident- derailment of locomotives from freight train No 30561 within departure from fourth track at switch No 11 in Zimnitsa station on 23.12.2014**



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## FINAL REPORT

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*Technical investigation of railway accident- derailment of locomotives from freight train No 30561 within departure from fourth track at switch No 11 in Zimnitsa station on 23.12.2014*

### Objective of the report and rate of responsibility

As per Directive 2004/49/EC of the European Parliament and Council on the rail transport safety in the Community, Rail Transport Act of Republic of Bulgaria and Ordinance No 59 dated 5.12.2006, the investigation of rail events aims at: finding the cause, which led to its occurrence in order to eliminate and avoid it in future, **without seeking any personal fault and responsibility.**

The investigation is being performed as per art. 115i, par. 2, of the RTA, and art. 78, par. 1 of Ordinance No 59 dated 5.12.2006, as a commission for investigation of the rail accident was nominated by Order No ПД-08-2/06.01.2015 of the Minister of Transport, Information Technology and Communication.

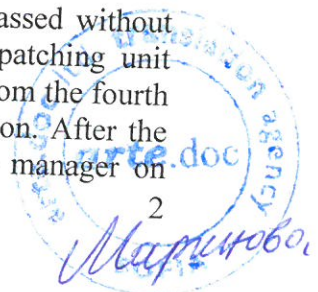
The investigation commission performed several inspections on the accident site and questioned the persons, involved in the accident. In order to clarify timely and to ascertain the circumstances and causes that led to the accident occurrence, independent experts were joined to the Commission. In the course of the investigation were reviewed the report, finding records, other materials and documents, submitted by the Task Force. The Commission confiscated evidences, based on which performed encoding and analysis of the train speed from the recording device of locomotive No 92034 in graphical and tabular form at MTITC. There was elaborated a technical expertise of the broken parts structure from the left point of switch No 11 at Zimnitsa station in a laboratory of the Bulgarian Academy of Science (BAS).

The chairman/president of the Commission accepted the presented from the external experts statements on the accident in implementation of the tasks assigned from him.

#### 1. Ascertained facts and circumstances in the course of investigation.

On 23.12.2014 from Pirdop station to Burgas station was composed a train No 30561 running as per the timetable along Pirdop-Tulovo-Karnobat-Burgas destination. The train was in a composition of 25 wagons, 3 of which loaded and 22 empty, 144 axes, 1112 tons. Electric locomotive No 92034 with locomotive crew—engine-driver, locomotive first person and engine driver, locomotive second person, hauled the train. There was second locomotive No 92027 to the train, in non-functional condition with engine driver, locomotive using alignment. The railway undertaking DB Schenker Rail Bulgaria EOOD serviced the train. It departed from Pirdop station at 00:57 a.m. and arrived at Karlovo station at 2:12 a.m. To the train was performed technical inspection and reduced test “D” to the automatic train brake from technician mechanic wagon inspector (TMWI) and departed from Karlovo station at 2:27 a.m. The train arrived at Zimnitsa station at 6:46 a.m. on fourth acceptance-departure track.

At 6:58 a.m. along the third track in the station fast train No 3602 passed without stopping. As per an order of the train dispatcher Regional operational dispatching unit (RODU)—Plovdiv was prepared the departure route of freight train No 30561 from the fourth track to Straldzha station along current track No 1 in Burgas station destination. After the opening of a regular exit signal and given departure order from the traffic manager on



duty/second person, at 07:02 a.m. the train departed from the fourth track to Straldzha station.

Within the entering of the train into the exit switches with a speed of 19 km/h, the locomotive crew of the train, locomotive No 92034 felt strong vibration and jumping of the locomotive. The locomotive driver of locomotive No 92027 felt also the same. The locomotive driver of locomotive No 92034 undertook measures for stopping with the train brake.

The train stopped after approximately 80 m, the locomotive drivers got off, performed an inspection, and found that the two locomotives derailed with all the wheel-sets, however there were no derailed wagons. After the derailment, the train, locomotive No 92034 stopped in current track No 2. The second locomotive No 92027 followed the same route and after the stopping closed the clearance gauge for current track No 1 with the rear cabin. The locomotive drivers also found that the left point of witch No 11 was broken. They informed the traffic manager on duty at DB Schenker Rail Bulgaria EOOD on the derailment.

The traffic manager on duty/second person noticed that; stopped in the exit switches and informed the traffic manager on duty/first person, who sent the post switchman/level-crossing guard of post No 2 to check the causes for the train stopping.

After approaching the train, the switchman saw that the locomotives derailed and reported that to the traffic manager on duty/first person, who immediately informed the train dispatchers of III-rd. and VIII-th railway line.

Within the inspection, performed on the day of the accident, the Investigation Commission found the following:

- Broken left point at a distance of 7.44 m from the top of switch No 11;
- The two locomotives with all the wheel-sets derailed after switch No 11;
- The train, electric locomotive No 92034 derailed after switch No 11 to the left, with the two bogies in the train operation direction. The left point of the switch was broken and the driving wheel of the first wheel-set moved up in the free part of the point and fell down between the stock rail and the point. When the train approached in gauge larger than 1498 mm, also the right wheel in the first wheel-set fell. Then the rest five wheel-sets also derailed. The locomotive directed towards switch No 7 along current track No 2 and stopped at 1.30 m before switch No 3;
- the electric locomotive No 92027 also derailed with the two bogies, as the first bogie followed the direction of locomotive No 92034 to the left, and the second bogie directed to switch No 5 to the right and covered the clearance gauge of track No 1.

By dispatching Order No 127 of the train dispatcher at RODU - Plovdiv, from 7:46 a.m. was closed the train operation for all the vehicles along track No 1 and track No 2 along Zimnitsa-Straldzha interstation, except for the rehabilitation vehicles.

There were performed joint inspections from the Technical investigation commission and representatives from the Regional Office of Ministry of Interior-Straldzha, carrying out procedural and investigative actions, then at 10:40 a.m. was given a written permission for starting the emergency-rehabilitation works to NRIC.

The train was hauled back to the fourth track in the station without the derailed locomotives.

At 13:08 p.m., at Zimnitsa station arrived rehabilitation train of Stara Zagora rehabilitation office and rehabilitation vehicles from Karnobat station.

The employees of the rehabilitation offices of Karnobat and Stara Zagora started work on lifting of the locomotives in order to open the clearance gauge of track No 1.

At 17:10 p.m. was lifted locomotive No 92027 and hauled to the third track in the station.

At 18:01 p.m. by dispatching Order No 129 of the train dispatcher at RODU - Plovdiv the train operation along Zimnitsa-Straldzha interstation on current track No 1 was restored. That happened by presenting Form II-A for passing the section from km 199+000 to km 199+300 with speed of 25 km/h.

3  
Ustavno

Locomotive No 92034 was lifted and hauled to the third track in the station at 02:00 a.m. on 24.12.2014, attached to a locomotive No 92027.

The train operation with speed as per the Timetable book was permitted on 24.12.2014, at 15:50 p.m. after the head of railway section registered in the train logbook the completed emergency-rehabilitation works in Zimnitsa station.

At 16:21 p.m. by dispatching Order No 142 of the train dispatcher at RODU - Plovdiv the normal train operation along Zimnitsa-Straldzha interstation on track No 1 and track No 2 was restored.

## **2. Officials involved in the case.**

### **2.1 Locomotive crew:**

2.1.1. "Engine-driver, locomotive" of electric locomotive No 92034 of DB Schenker Rail Bulgaria - 8 years of work experience;

2.1.2. "Engine-driver, locomotive" II-nd person of electric locomotive No 92034 of DB Schenker Rail Bulgaria - 7 years of work experience;

2.1.3. "Engine-driver, locomotive" of electric locomotive No 92027 of DB Schenker Rail Bulgaria - 28 years of work experience;

### **2.2. Station officials:**

2.2.1. "Traffic manager" - I-st person, Zimnitsa station—employee at Train operation and station activity management division (TOSAMD) - Plovdiv, NRIC - 15 years of work experience;

2.2.2. "Traffic manager" - II-nd person, Zimnitsa station – employee at TOSAMD - Plovdiv, NRIC - 17 years of work experience;

2.2.1. "Switchman/level-crossing guard" Zimnitsa station - employee at TOSAMD - Plovdiv, NRIC - 2 years of work experience;

## **3. Physical condition of the officials involved in the accident.**

To the officials, involved in the accident was assured the necessary duration of rest before starting work as required by the Labour Code and Ordinance No 50 of 28.12.2001 on the Working time of the management and executive personnel, involved in the provision of passenger and freight rail transport.

To the officials, involved in the accident was performed a pre-travel (pre-shift) instruction and they were declared to be alerted, rested and that did not drink any alcohol and other drugs.

The officials, involved in the accident possessed valid certificates of psychological examination.

## **4. Documents, certifying work qualification and exercise of work position.**

The SE NRIC officials, involved in the accident, possessed the necessary work and professional qualifications for the respective work position and a certificate for its execution.

The locomotive personnel from DB Schenker Rail Bulgaria EOOD of locomotives No 92034 and No92027, possessed the necessary work qualification documents.

The certificates of the obtained qualification for driving the respective locomotive series were issued in contravention of the provisions, stipulated in art. 18, it. 6, of the Professional education and training Act.

## **5. Actions of the officials before and during the accident.**

Immediately before and during the accident all the officials acted in accordance with the effective and approved legislative documents and internal rules, which regulate the traffic safety in the rail transport.



**6. Circumstances, preceding the accident in terms of track, signalling equipment, catenary, rolling stock etc.**

Meteorological weather data, which had impact on the visibility of signals:

- Air temperature -2,2° C;
- In the day-light hours;
- Good visibility.

The plan for the train acceptance in the station was respected.

Permanent way–documentary regular.

Condition of the station and interstation signalling technique before the accident - regular.

The switches at the station are electric and were locked for the route.

Catenary–technically regular, does not refer to the occurred accident.

Train composition station - Pirdop.

Communication technique and telecommunication connections–technically regular.

Rail rolling stock (RRS):

The electric locomotive No92034, was technically regular with regular draft gear, brake system, illumination and sound signals as per the technical norms and requirements, which was evident from the records in the respective log-books, presented in the Task-force report.

Wagons series – “E”, open wagons for traffic of bulk cargos.

**7. Fulfilment of the working procedures and technologies within the system of the SE National Railway Infrastructure Company before and during the accident.**

The procedures and working technologies at Train operation and station activity management Division (TOSAM) – Plovdiv, which is within the structure of SE NRIC, before and during the accident were fulfilled, which was evident from the Task-force report and the applications to it. There were performed confrontations with the station personnel, involved in the accident as well as tests to the installation.

**8. Fulfilment of the procedures and technologies for rolling stock service within the railway undertaking system before and during the accident.**

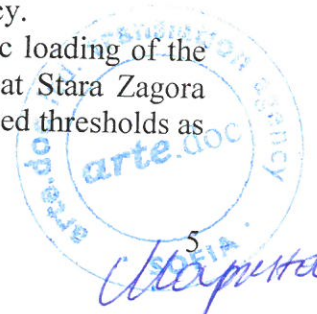
The freight train No 30561 was composed at Pirdop station, ensured with the necessary brake mass, and equipped with the necessary train documents. The train was running in accordance with the train operation schedule (TOS) and was serviced by a licensed railway undertaking, DB Schenker Rail Bulgaria EOOD. The locomotive crew was provided with a business mobile phone.

No infringements of the effective, Rules for factory and depot repair and maintenance of electric locomotives, as well as of the organisation and operation related to the derailment were ascertained and recorded within the review of the technical documentation for locomotive No 92034.

During the performed check of the technical documentation for the derailed locomotives No 92034 and No 92027, was found the following:

- As per Ordinance No 57 dated 9.06.2004 for achievement of interoperability of the national railway system with the railway system within the European union, the same were registered into the British register of vehicles with twelve digit identification codes No 91700092034-3 and No 917000920277. To the moment of the railway accident, the locomotives were registered with the above-mentioned codes into the National register of vehicles (NRV), maintained by the Railway Administration Executive Agency.

- The Investigation commission performed measurement of the static loading of the wheels of 6-axes locomotives to locomotive No 92034 dated 09.01.2015 at Stara Zagora locomotive depot–and found that the measured values were within the accepted thresholds as per the legislative documents requirements.



- The Railway Administration Executive Agency issued on 04.12.2013, an additional authorization for placing into service of electric locomotive No 92034, with European identification No BG 5120130030 of DB Schenker Rail Bulgaria EOOD, Pirdop. The authorization is valid for curves with radius  $R \geq 190$  m.

## **9. Railway infrastructure and rolling stock status before, during, and after the accident.**

There was performed a monthly manual measurement of switch No 11, with radius  $R=300$  m. at Zimnitsa station from Yambol –railway section for the period from May to December 2014 as per art. 400 from Rules of the infrastructure technical operation of SE NRIC. The following results were registered: switch No 11 –technically regular;

### **9.1. Switches**

Before the derailment –a switch No 11 –technically regular, after the derailment the left point of the switch was broken;

### **9.2. Signalling technique**

- RRI ,”WSSB” I-st option –technically regular.

On 11.12.2014 was performed a crack test of switches NoNo 1, 3, 5, 7, 9 and 11 as per the Method of organization of crack test to rails, railway switches, welded joints and rehabilitated through stratification permanent way components with flaw detector RDM – 1M1, factory No 328.

There was found that the railway infrastructure was documentary regular before and during the accident.

As a result, from the accident multiple damages were found on railway switches NoNo 11, 5 and 7, as well as to the crossovers, which were described in it. 10.4.

The electric locomotives No 92034 and No 92027 of freight train No 30561 were technically regular before the accident.

Technical damages to the derailed locomotives No 92034 and No 92027 were found as a result from the accident, and described in it. 10.3.

## **10. Consequences from the accident.**

**10.1. Fatalities** –there were no any;

**10.2. Seriously injured** –there were no any;

### **10.3. Failures and damages to the RRS:**

**10.3.1. Electric locomotives:**

The electric locomotives No 92034 and No 92027 were property of DB Schenker Rail Bulgaria EOOD.

In order to eliminate the caused damages to the electric locomotives under a presented reference from DB Schenker Rail Bulgaria EOOD., there were made costs amounting in total to 350 593.36 BGN with VAT. The expenses were made for rehabilitation of 6 wheel-sets, 10 gearboxes, repair of 8 brake cylinders, repair of 11 injectors for sand, repair of the buffer and gear equipment, check of the mechanical and pneumatic part, brake test and weighing balance.

### **10.4. Failures and damages to the rail infrastructure:**

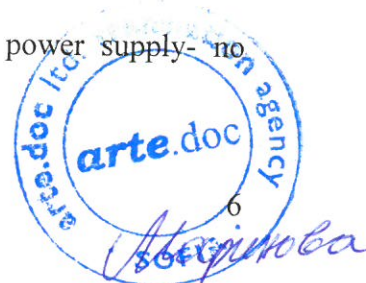
**10.4.1. Permanent way and structures:**

The costs for rehabilitation of the permanent way and switches NoNo 5, 7 and 11, amounted to 25 366 BGN without VAT.

The costs for lifting the derailed locomotives on track in the station for the train operation restoration amounted to 6 954 BGN without VAT.

**10.4.2. Signalling and communications, radio connections and power supply:** no damages were found.

**10.4.3. Catenary** –no damages were found.



The costs of Regional division–“Plovdiv Power Supply Section” at SE NRIC for safety and participation in the rehabilitation works after the derailment amounted to 2 905 BGN without VAT.

10.4.4. Other failures and damages –there were no any.

#### **10.5 Damages to wagons and spill of freights –there were no any.**

#### **10.6. Interruption of the train circulation:**

Due to the derailment of freight train No 30561 in Zimnitsa station and closing of the clearance gauge for operation, the train circulation between Zimnitsa-Straldzha stations along current track No 1 and current track No 2 was interrupted from 07:05 a.m. to 18:10 p.m. on 23.12.2014, 11 hours and 05 min. in total.

#### **10.7. Caused train delay:**

##### **10.7.1. Delayed trains**

###### 10.7.1.1 Passenger trains

-Train No 80144 –“BDZ-PS” EOOD - 62 min.;

##### **10.7.2. Cancelled trains**

- Train No 8610 and No 3622 Straldzha - Sofia“BDZ-PS” EOOD;
- Train No 8631 Sliven-Varna“BDZ-PS” EOOD;
- Train No 3621 and 3623 Sliven - Burgas“BDZ-PS” EOOD;
- Train No 3624 Straldzha-Sofia „“BDZ-PS” EOOD;
- Train No 80140/80143 Straldzha–Sliven-Straldzha“BDZ-PS” EOOD;
- Train No 80142/80145 Karnobat–Sliven-Karnobat“BDZ-PS” EOOD;
- Train No 80122/80123 Karnobat–Zimnitsa-Karnobat“BDZ-PS” EOOD;
- Train No 30580 Karnobat-Pirdop /BRC/
- Train No 30562 Burgas–Pirdop DB Schenker.

##### **10.7.3. Appointed trains**

- Train No 8679 Straldzha - Varna“BDZ-PS” EOOD;
- Train No 3691 Straldzha-Varna“BDZ-PS” EOOD;
- Train No 3695 Straldzha-Burgasc“BDZ-PS” EOOD;
- Train No 3692 Sliven - Sofia“BDZ-PS” EOOD;
- Train No 3694 Sliven-Sofia“BDZ-PS” EOOD;
- Train No 30590 Karnobat-Pirdop /BRC/

Buses transhipped the passengers along Sliven-Straldzha section.

#### **10.7.4. Costs for amendment of the Train operation schedule:**

10.7.4.1 “BDZ Passenger Services” EOOD - 36 102,31BGN without VAT.

10.7.4.2 “BDZ Cargo” EOOD - 27 644,34BGN without VAT.

#### **10.8. Circulation of rehabilitation vehicles.**

##### 10.8.1.Rehabilitation train.

At 17:03 p.m. on 23.12.2014 on the accident site for lifting of the derailed locomotives from Stara Zagora station to Zimnitsa station arrived a rehabilitation train in composition “Rehabilitation crane” of SE NRIC.

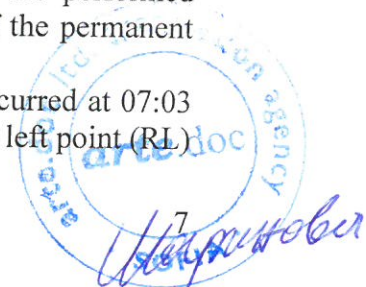
##### 10.8.2. Other rehabilitation vehicles.

At 14:03 p.m. on 23.12.2014 on the accident site was sent a specialised automobile “UNIMOG” from Plovdiv station to Zimnitsa station of SE NRIC.

### **11. Analyses of the causes for the railway accident.**

The Technical investigation commission found the following from the performed inspections, additionally required materials, and additional measurements of the permanent way and derailed locomotives:

- The derailment of the two locomotives of freight train No 30561 occurred at 07:03 a.m. (at a distance of 8,94 m from the start of switch No 11, after breaking the left point (RL))



of the switch at a distance of 7,44 m. ) from the top. Switch No 11 were with radius  $R=300$  m. and cant  $H=0$ ;

- The train speed to the moment of derailment was 19 km/h, within the speed limit in deviation of 40 km/h.;

- On the accident site was found–broken left point of switch No 11, in the area of the profile at 100 mm before the joint of the flash-butt welding, produced by VOESTALXMEZELTWEG – AUSTRIA, S49-300-1:9 RR 1984. The location of the break in the point was between the two neighbouring slide chairs. In the upper part of the head of the point was found an existing old micro-crack. The crack morphology was tested in a laboratory of the BAS on metal science, visually and with the assistance of microscopic methods (optic microscope). A visual observation of the test samples from the left point was performed. On the upper part of the samples was observed destroyed working part of the rail crown and undercut areas. No slag inclusions or other visible defects were registered.

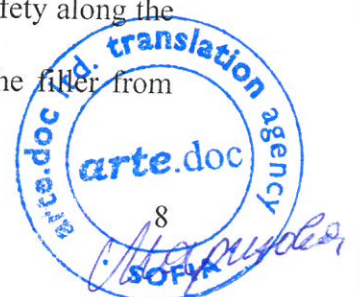
The stress concentrator, created in the rail crown led to shaping of micro-crack and subsequently to complete vertical crack of the rail. The observed change in the structure thickness showed the process development.

The observed dents on the crown and the switch point within the broken area resulted from the crack, however did not cause it.

Within the operation of the rail switches, the same were subjected to strong dynamic loads from the rail rolling stock. In order to ensure the traffic safety, there was necessary with the assistance of proper methods for non-destructive testing the timely finding and elimination of occurring defects in their components. For the aim, specialised ultrasonic, diagnostic flaw detection was used, which allowed to be registered and assessed the defects as on the surface as well as in the inner part of the switch rails. The rail switches as a track superstructure component were under intensive aggressive impact of the dynamic load from the trains and from the surrounding environment and climate. Those factors defined and led to a composition and development of different defects, which endangered the rail traffic safety. In the process of exploitation under the impact of the dynamic and climate factors, in the rails occurred different in composition defects, deformations, and fatigue of the material. The problems could be solved by modern physical methods of non-destructive testing. The best practices in other member-countries of the European Union showed that the good organization and skilled use of the modern testing technologies and methods, allowed the assessment of reliability within the finding of the hidden defects. According to the irregularities technology at SE NRIC of the rail components as per the Rails defects classifier of the track, the irregularities were classified as numbers composed by three digits. The first digit characterized the type of the defect and its location (in the crown/head, web or foot). The second digit showed the reason for the rail damage, and the third– the location of the defect along the rail length.

On 11.12.2014 at Zimnitsa station was performed a non-destructive testing of switches No 1, 3, 5, 7, 9 and 11 with flaw-detector type RDM - 1M1, with factory No 328, as per “Rules of organization of crack test (non-destructive testing) to rails, railway switches, welded joints and rehabilitated through stratification permanent way components”. That was evident from the Logbook of a non-destructive testing group (Appendix 3 to art. 22, it. 9, letter “a”) at Plovdiv railway section. During the non-destructive testing due to the limited technical availabilities of the flaw-detection control were not found any irregularities of the measured switches components. By the performed protective non-destructive testing with the type of ultrasonic flaw-detector was not possible, the whole profile of the switch components to be traced. For the aim was necessary to be ensured a new modern technique for flaw-detection with more possibilities for precise check of the rail profiles and increasing the quality of the implemented crack test in order to guarantee the operation safety along the rail track.

The general technical condition of the switches at Zimnitsa station–the filler from Straldzha side was good.





Due to the destruction of switches No 11, No 5 and No 7, resulted from the derailment, there was a lack of data from technical measurements after the derailment, reflected into the Task force finding protocol for the permanent way.

Within break of the left point of switch No 11, occurred cross vertical displacement of the two parts of the rail blade. Critical condition of derailment of the first locomotive with all the wheel-sets resulted from that displacement. After the derailment, the first locomotive No 92034, run along the straight switch component, passing through switch No 7 and stopped at 1.30 m. before switch No 3 on current track No 2. The derailed locomotive dragged after it also the second locomotive No 92027. The second locomotive also derailed with all the wheel-sets and directed towards switch No 7. The second bogie directed also towards switch No 5 and closed the clearance gauge for current track No 1.

The Technical investigation commission performed additional measurements for finding out the parameters of technical condition of the draft gear of locomotive No 92034 on 07.01.2015 at Stara Zagora locomotive depot and found the following:

- Distance between the inner front surfaces of the wheels;

Parameters	Subject of measurement – distance between the inner front surfaces of the wheels, mm.					
	First bogie			Second bogie		
Ar	1358	1359	1358	1359	1358,5	1359
$\Delta l$	0,3	0,6	0,5	1,0	1,0	0,5
Sr	1412	1410,5	1411	1416,9	1413,3	1417,2

- Parameters of the flanges;

Type of parameter	Subject of measurement – Parameters of the flanges mm											
	1 wheel-set		2 wheel-set		3 wheel-set		4 wheel-set		5 wheel-set		6 wheel-set	
	left	right	left	right	left	right	left	right	left	right	left	right
Width	27,0	27,0	26,2	25,3	27,2	25,8	29,1	28,8	27,0	27,8	29,5	28,7
Height	28,8	30,0	28,0	28,4	29,8	29,2	28,5	28,9	28,8	28,0	29,0	29,0
Vertical cutting	10,0	9,8	9,2	8,2	10,5	8,8	9,9	9,5	9,6	9,0	10,2	9,0

The measured parameters of locomotive No 92034, entered into the tables were within the thresholds and in accordance with the requirements of Ordinance No 58 dated 02 August 2006 on the rules of the technical operation, train circulation and signalling in the rail transport.

The found damages on the bogies and the body-shell of the locomotives resulted from the occurred derailment.

## 12. Causes for the accident.

The Technical investigation commission performed inspections and measurements of locomotive No 92034 at Stara Zagora locomotive depot as well as track measurements in Zimnitsa station. The Commission became acquainted with the collected materials and documents of the Task force; analysed the presented encoding of the train running speed and the technical expertise from the metallographic analyses of the broken part of the switch point, and the external experts' statements. As a result from the mentioned above, the Commission considered that:

**Immediate technical cause** for the occurred accident derailment of the locomotives of freight train No 30561 during its departure from fourth track in Zimnitsa station on 23.12.2014 was the cross/transversal brittle breaking of the left deviation point of



**switch No 11. The breaking occurred in the rail crown as a result from created external tension concentrator and inner micro-crack.** The breaking developed into the core part of the rail crown as a result from the dynamic impact, which led to avalanched destruction from the crown to the rail foot. The mechanism of destruction was completely fragile. The location of the found defect was between two sleepers and two supporting wedges. That was a precondition for the caused horizontal displacement of the broken point parts.

Within continuous impact from cyclic loading started a development of micro-crack, which led to the final destruction of the switch point. The destruction occurred transversally to the length through the whole section of the blade into the defect germ. Resulted from the repeating loadings of the passing trains and vehicles, the formed inner crack developed and reached the critical blade section (there was possible increased dynamic impact -overloading). Based on the micrographic observations of the destructed surfaces was found that the destruction occurred under the impact of tensions, applied to the rail blade before the breaking area.

### **13. Recommendations and suggestions for preventing events against other similar accidents.**

In order to improve the safety level and to prevent the occurrence of similar accidents and with reference to the requirements of art. 94, par. 1 of Ordinance No 59 dated 5.12.2006 on the management of railway safety of the Minister of Transport, the Railway Administration Executive Agency shall order the implementation and performance of the following safety recommendations:

1. SE NRIC shall study the opportunity and supply the equipment for non-destructive testing with opportunities for precise finding of defects on the switch parts profile and components in the permanent way.

2. The railway undertaking DB Schenker Rail Bulgaria EOOD shall organize and conduct training and shall issue new certificates of qualification for the locomotive personnel, operating the respective locomotive series from licensed training centre as per the requirements of art. 18, it. 6 of the Professional education and training Act.

The Railway Administration Executive Agency shall perform a control for respect of the requirements on the issuance of documents for the obtained qualification of the locomotive drivers as per the legislative documents.

With reference to the requirements of art. 94, par. 3 of Ordinance No 59 dated 5.12.2006 on the management of railway safety the recommendations addressees shall notify in writing the chairman/president of the Investigation Commission at MTITC not later than 31.07.2015 on the undertaken appropriate actions for the implementation of the given recommendations.

#### **Chairman:**

.....(signature)..... (Boycho Skrobanski)  
*State Inspector at AMRAIUD, at MTITC*

*I, the undersigned Julieta Marinova hereby certify the authenticity of the translation from Bulgarian into English language of the present document.*  
*Translator:*

