



## NOTE

*for the railway incident happened on the 24th June 2019,  
in the railway county Iași, on the running line Dărmănești – Cacica,  
at the level crossing from km 4+925, flooded dangerous point,  
consisting in the derailment of all 4 axles of the locomotive EC 078,  
hauling of the passenger train no.5731*

On the **24th June 2019**, at 03:20 o'clock, in the **railway county Iași**, track section **Suceava – Cacica** (electrified single-track line), at the level crossing, (provided with road sign), km.4+925, in the running of the passenger train no.5731 (got by the railway undertaking SNTFC „CFR Călători” SA), hauled with the locomotive EC 078, its all four axles derailed.

The event was notified on the 24th June 2019, being preliminary classified like fact that is not accident or incident and that led to the accidental closing of the railway traffic, by the Regional Safety Inspectorate from the railway county Iași, at art.9, paragraph a) from the *Regulations for the investigation of the accidents and incidents, for the development and improvement of the railway safety on Romanian railway and metro network*, approved through the Government Decision no.117/2010 (hereinafter referred to as *Investigation Regulations*).



★ **Locul producerii incidentului,  
km 4+925**

*Drawing no.1 – incident site*

Following the notification of this incident, made in accordance with the specific regulations in force, staff of Romanian Railway Investigation Agency, of public railway infrastructure administrator CNCF „CFR” SA, of railway undertaking SNTFC “CFR Călători” SA, of Romanian Railway Safety Authority and of Railway Police Suceava Nord travelled to the incident site.

On the 24th June 2019, upon art.19, paragraph (1) from *Law no.55/2006 for the railway safety*, corroborated with art.49 of *Investigation Regulations*, an investigation commission was appointed by Romanian Railway Investigation Agency for the collection and analysis of the technical information conditions, establishment of the conditions, including the establishment of causes and, if case, issuing of

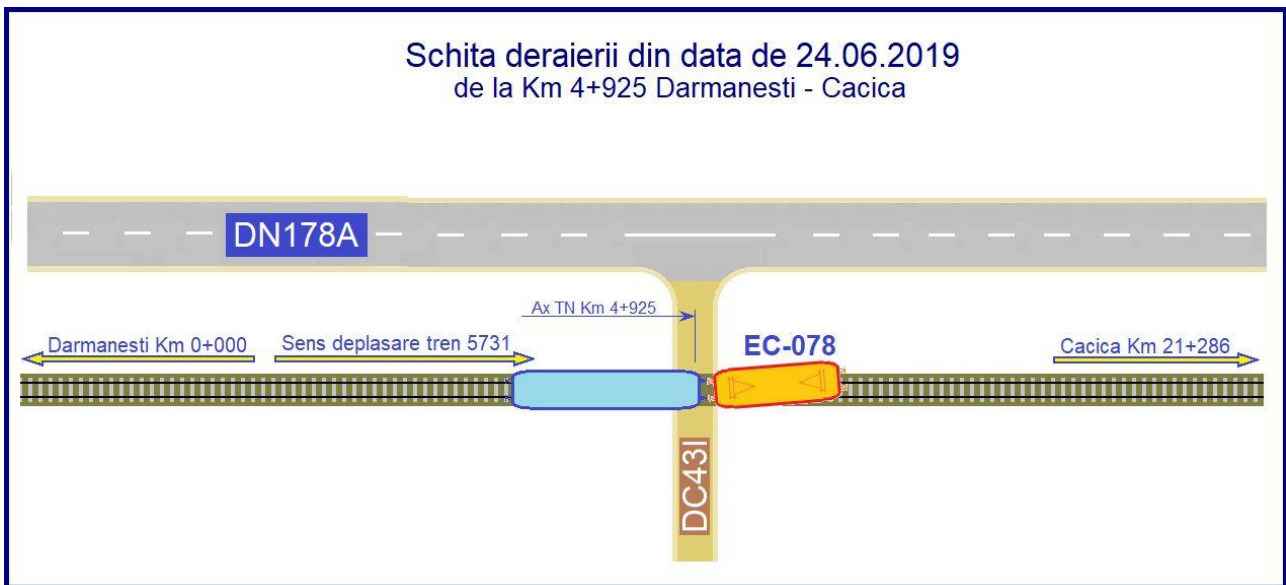
safety recommendations for the prevention of some similar accidents and improvement of the railway safety.

### **Presentation of the railway incident**

On the 24th June 2019, the passenger train no.5731, got by the railway undertaking SNTFC „CFR Călători” SA, was dispatched from the railway station Suceava, at 02:54 o'clock, to the railway station Cacica, where it had to arrive at 03:40 o'clock.

The passenger train no.5731 consisted in the hauling locomotive EC 078 and a passenger car, without passengers, 4 axles, 47 gross tonnage, automatic braked tonnage necessary/real:40 t/61 t, hand braked tonnage necessary/real:8 t/22 t and length of 50 m.

After running through the railway station Părhăuți, at about 03:30 o'clock, at the level crossing DC 43 I from km.4+925, all the axles of the hauling locomotive EC078 derailed. The derailment happened at a speed of 32 km/h, following its decrease as a result of the driver action that noticed late the deposits of stones and alluviums on the level crossing.



*Drawing no.2 – position of rolling stock after the derailment*

Distance run by the locomotive EC 078, in derailed condition, is of about 20 m. after the level crossing.

### **Incident consequences**

#### Track superstructure

Following the incident, the superstructure and infrastructure of the running line Dărmănești–Cacica were affected, in the area before, within and after the level crossing, by the alluviums and gravel that led to the clogging of the drainage channels, on the left and right sides of the line, clogging of the channel under the footbridge for water drainage, from km.4+920, close to the level crossing, clogging of the drainage channel from the border of the road, taking the ballast from the village road DC 43 I and the deposit in the area of the level crossing, covering completely of the upper level of the rail.

#### Railway equipments

None.

#### Rolling stock

Following this incident, the train locomotive EC 078 was damaged. The tyres of those 4 axles had deep marks of hit (5-6 mm) on the flange of the wheel and on the running surface, and for the remediation there was necessary the turning of the wheels.

### Interruptions of the railway traffic

The running line Dărmănești–Cacica was closed on the 24th June 2019, at 03:30 o'clock and the traffic was resumed at 11:30 o'clock, with speed restriction 10 km/h, between km 4+900 and km 4+950. Four passenger trains were cancelled (trains no.5731/5730 and no.5733/5732).

### Injuries

None.

### Measures taken and works performed for the railway traffic resuming

For resuming the traffic, a breakdown train was routed from the railway station Pașcani. The lifting and re-railing of the locomotive EC 078 were made on the 24th June 2019, at 09:25 o'clock.

The structure clearance was cleared out, removing the ballast from the level crossing and the line was open for traffic at 11:30 o'clock, with speed restriction of 10 km/h, between km 4+900 and km 4+950.



*Photo no.1 – removal of the ballast from the level crossing*

### **Data found about the rolling stock and the infrastructure**

#### *Data about the rolling stock*

Regarding the findings, checking and measurements made at the railway vehicles composing the passenger train no.5731, after the incident, one can conclude that the technical condition of the rolling stock did not contribute to the derailment.

#### *Data about the tracks*

The route of the line in the area of the level crossing from la km.4+925, between the railway stations Dărmănești-Cacica is in a straight line, gradient (about 2 ‰) in the train running direction, and it is the crossing point of line with the village road DC 43 I, road of technical class V. The village road DC 43 I

had a gradient of 3,5 % to the level crossing and was covered with a ballast level of about 12 cm, taken from the village road on slope to the level crossing.

The village road connects the village Părhăuți to the county road 178A.

The level crossing is in the village Todirești, being provided with road signs type IR, having a width of 4 m and made from concrete slabs.

The km.4+900÷km.4+950 is recorded in the evidence of the Track Section L5 Suceava like flooded dangerous point category I.

The channel under the footbridge from km.4+920 (close to the level crossing) is clogged 100%.

The channels from km 4+850÷950, left and right sides, were clogged 100%.

The track superstructure at the incident site consists in rail type 49, non-welded track, concrete sleepers and indirect fastening type K.

In the night 23/24 June 2019, between the hours 0:00÷1:00, a local heavy rain, that generating water accumulations in a very short time (50÷70 l/m<sup>2</sup>), took the ballast from the village road DC 43 I and deposited it on the level crossing, covering completely the upper level of the rail.



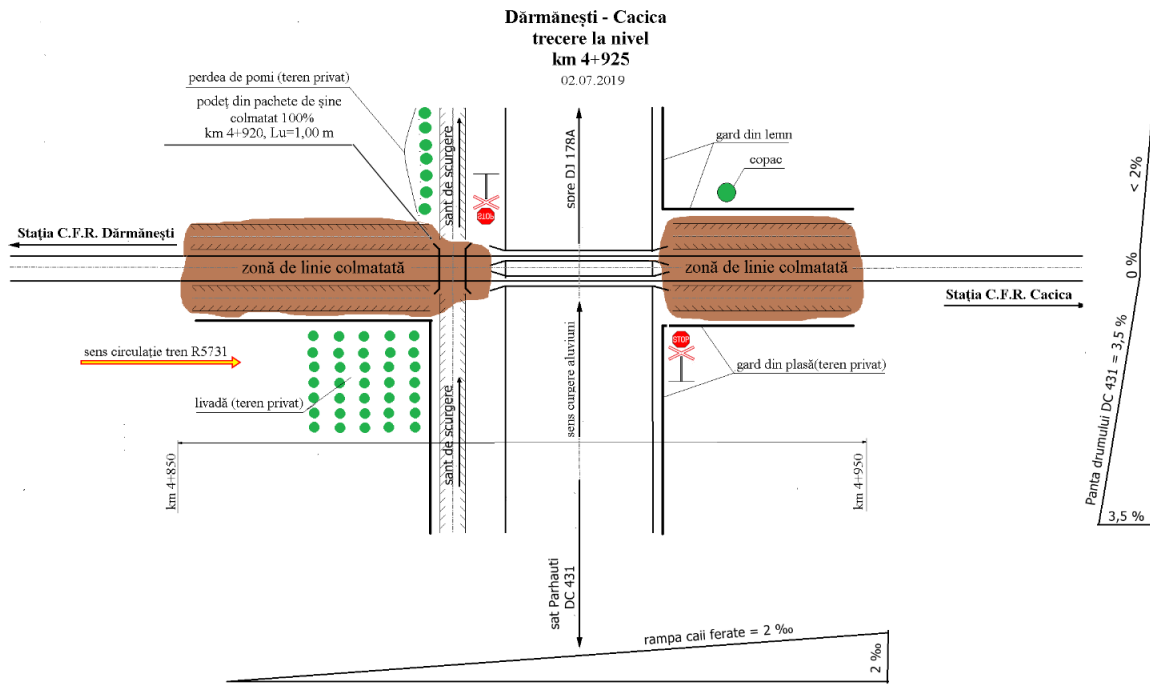
*Photo n0.2 – locomotive after the derailment*

The maximum speed of the trains (both passenger and freight ones), at the accident site, was 50 km/h.

Having like reference the train running direction, the first marks of running of the wheel flange on the upper surface of the rails and then the derailment marks were identified at the level crossing from km.4+925. Analysing the findings from the incident site (marks left by the locomotive wheels in derailed condition and its position after stop etc), the track geometry and technical condition, as well as the findings at the locomotive involved in the event, the investigation commission concluded that the marks identified at the level crossing from km.4+925 are of the wheels of the locomotive EC 078, following the climbing of the active shoulders of the rails by the flanges of the wheels, their running on the gravel layer, covering the rails and the concrete slabs of the level crossing, followed by the fall outside the track of the left wheels simultaneously with the fall of the right wheels inside the track.

For soon repairing of the infrastructure and resuming of the traffic at the incident site, the staff of the railway county Iași performed works, with its own staff, manually and mechanically, for the removal

of the gravel land alluviums from the road and the throughs of the level crossing from km 4+925, respectively partial clogging of the channel under the footbridge, for the water drainage, from km.4+920.



Schița nr.3 – trecerea la nivel km 4+925 după restabilirea circulației

Therewith, the Emergency Cell of the railway county Iasi sent to the Inspectorate for Emergency Situations “BUCOVINA” county Suceava, the report no. 1.7/277 from the 25th June 2019 regarding the finding and assessment of the damages generated by the heavy rainfall from the period of time 22÷24.06.2019.

The commission for the finding and assessment of damages, appointed in accordance with the provisions of Order no. 154/2017 of the prefect of the county Suceava, travelled to Todirești, at the line 511 Dărmănești-Cacica, in the calamitous areas in order to find the effects generated.

The management of the railway county Iași, through the paper no. 2.3/254/02.07.2019 of the Line Division, Department LAT, notified the Hall Todirești, that is the administrator of the village road DC 43 I, about the derailment of the locomotive of the train no. 5731, following the taking of the gravel from the road with gradient high to the line. Therewith, the Hall was asked to analyze the possibilities of upgrade the village road DC 43 I in the areas close to the level crossing from km 4+925 through bituminizing, concreting, concreting and making up of slabs, in order to avoid the occurrence of similar incidents.

On the 16th July 2019, they began the works with own staff, for reducing the risk factors in the flood dangerous point from the level crossing of the km.4+925.

The drainage channel from the side of the road was re-making and concreted. The slope of the village road was reduced DC 43 I under 2% on 17 m ditches with grid were fitted, parallel to the line, at 2,5 m and at 18 m against the edge of the slabs from the level crossing. The channel under the footbridge from the km.4+920 was unclogged. The channels from the line left and right borders, km 4+850÷950, were unclogged. The tubular footbridge, crossing the road, from the left side of the line, was replaced with a footbridge made from sleepers.



*Photo no.3 – level crossing km 4+925, after finishing the rearrangement works*

Considering those above mentioned, the investigation commission considers that, **the derailment of those 4 axles of the locomotive EC 078 had natural causes**, following the occupation of the structure clearance with a thick layer of alluviums and gravel, taken from the access road and deposited on the level crossing (flooded dangerous point from the category), following the local heavy rainfalls that generated important water quantities in a very short time, before the incident.

Following the conclusions above mentioned, **we propose that the investigation be closed**, open upon the decision no.315 from the 24th June 2019 and **the classification of this railway incident be kept** according to the provisions of the *Investigation Regulations*, at art.9, paragraph a) - ” *There are not classified like accidents or incidents the situations and facts that led to the accidental closing of the railway traffic, having like causes:*

*a) natural, respectively floods, landslides, snow-drift, falls of stones, of trees and other obstacles unanticipated, earthquake, vegetation fires”.*