



MINISTRY OF TRANSPORTS AND INFRASTRUCTURE
ROMANIAN RAILWAY AUTHORITY - AFER

ROMANIAN RAILWAY INVESTIGATING BODY



INVESTIGATION REPORT

for the railway accident in Railway Station CORABIA occurred on 21.02.2011



Final edition

26 april 2011

NOTICE

In the case of the accident occurred on 21.02.2011 in the running of the passenger train no 15812, on the activity area of the Branch of the Railway County Craiova, in the railway station Corabia, consisting in the derailment of motor bogie in the area of switch no. 19 (first in the running direction) and the first axle from the bogie no.2 from diesel multiple unit AMX no. 4580, Romanian Railway Investigating Body performed an investigation, according to the provisions of the Government Decision no. 117/2010 *Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania*. Through the performed investigation, the information concerning the occurrence of this accident were gathered and analysed, the conditions were established and the causes determined.

The action of the Romanian Railway Investigating Body, does not aim to establish the guilt or the responsibility in this case.

Bucharest, 26 April 2011

I consider positive

Director
Dragoş FLOROIU

I ascertain the compliance with the legal provisions concerning the conduct of the investigation and the drawing up of this investigating report that
I submit for approval

Chief investigator

This notice is part of the report for the investigation of the railway accident occurred on 21 February 2011 in the running of the passenger train no. 15812 belonging to „SC REGIOTRANS SRL Braşov”, in the railway station Corabia, on the activity area of the Branch of the Railway County Craiova.

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I. PREAMBLE

I.1. Introduction

The investigation commission compound according to Annex 3 - *Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania*, approved by HG.117/17.02.2010, the investigation action is taken in order to prevent similar accidents cause by establishing conditions, determine causes and issuing safety recommendations.

The investigation action commission does not aim to establish the guilty or the responsibility, its objective being the improvement of the railway safety and the prevention of the railway accidents.

I.2. Investigation process

Romanian Railway Investigating Body was approved by the Regional Inspectorate for Traffic Safety of the Branch of the Railway County Craiova by the investigator responsible for the territorial structure, an accident occurring in the railway station Corabia and visited the site of the accident where found out the diesel multiple unit no. AMX 4580 derailed from the motor bogie, first in running and the first axle of bogie no.2, near the switch no. 19.

On the site of the railway accident were present the OIFR representative by the investigator of the investigation department of railway accidents and resolving the conflicts, ASFR by territorial chief inspector, SC RC-CF TRANS SRL Braşov by section chief and SC REGIOTRANS SRL Braşov by SC responsible..

The occurred and found facts on the site were ranked as railway accidents, according to Art.7, item1.b from *Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania*.

By Decision no. 52 from 22.02.2011 of the Romanian Railway Investigating Body Director investigation commission was appointed consisting of the following members:

-POPESCU Nicolae	- investigator OIFR	main investigator
-GHIDUREA Marian	- section chief - SC RC-CF TRANS SRL Braşov	member
-PÎRVU Viorel	- responsible SC RC-CF TRANS SRL Braşov	member
-SPĂTARU Ionel	- head driver SC REGIOTRANS SRL Braşov	member.

The activity of removing the effects of railway accident, that restoring normal traffic conditions was carried out by SC RC-CF TRANS SRL Braşov staff.

A. ACCIDENT BRIEF PRESENTATION

A.1. Brief presentation

On 21.02.2011, the passenger train no. 15812, composed of motorised train AMX no. 4580, was guided from railway station Corabia, to railway station Caracal. At 19:15, based on the departure signal of the train given by the movement inspector on duty with green light hand lamp pointed at the

train and the free indication output signal group F , the engine driver started to run the train no.15812, was running about 15m and passing the switch no.19 the motor bogie derailed, the first in running direction and the first axle of the bogie no.2 .

The site of the railway accident is located in the running section of the Branch of the Railway County Craiova on the hauling section non interoperable Caracal – Corabia rented by SC RC-CF TRANS SRL Braşov (photo 1).



photo no. 1

The passenger train no.15812, composed of diesel multiple unit AMX no. 5807, 8 axles, 80 tones, 44 meters, belonging to SC REGIOTRANS SRL Braşov is running on the section Corabia - Caracal. Following this railway accident there were no casualties or injured.

The consequences of the accident consisted of :

- the derailment of motorised train no. AMX 4580 of the motor bogie the first in running direction and the first axle of the bogie no.2 , in the area of the switch no.19. (photo 2)



photo no. 2

- between opening switch no.19 and its handling direct position on the deflecting position (photo 3).



photo no. 3

A.2. Direct cause, factors that contributed, underlying cause and root causes

A.2.1. Direct cause

The direct cause of the accident is non bonding the point blade to the stock rail on direct position, which allowed the right wheel of the axle no.1 from the bogie no. 1 (refer to the running direction) to engage in another route than ordered. This was possible by incomplete handling of switch no.19, and non providing it with switch lock.

A.2.2. Underlying cause

The underlying cause of the accident consists in non locking the switch no. 19 which was part of the dispatching route of train no.15812 in contravention with the provisions of art.125 point 2 from Regulation for running trains and hauling railway vehicles no. 005, approved by MTCT no.1816/2005, regarding the receiving / dispatching / passing a train to / from / through the station.

A.2.3. Root cause

There weren't identified root causes of this railway accident.

A.3. Severity level

According to the provisions of the Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania approved by GD no.117/2010, the event with its consequences falls as rail accident in Article 7, pct.1.b.

A.4. Safety recommendations

There weren't identified safety recommendations of this railway accident.

Measures taken during the investigation

Following the railway accident, according to the provision of art no. 63 from Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania approved by GD no. 117/2010, was requested by act no. 4130/249/2011 by the main investigator the suspension of service in Corabia station until the completion of the investigation report .

The present Investigating Report will be transmitted to the public railway infrastructure manager, non-interoperable railway infrastructure manager, railway operator and Romanian Railway Safety Authority.

B. Investigation Report

B.1. Summary of the accident

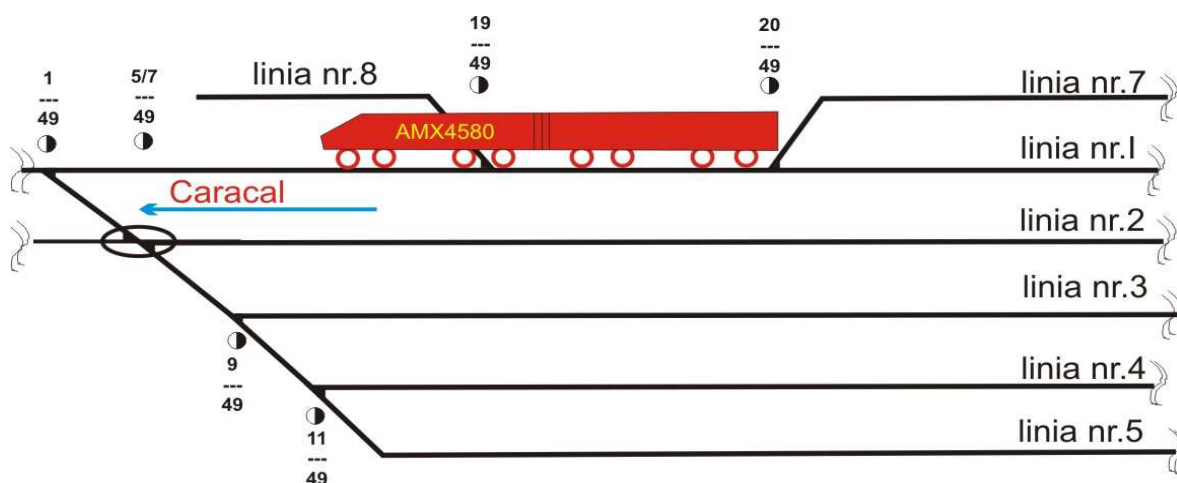
On 21.02.2011 at 17:20 in railway station Caracal, the engine driver received in possession the diesel multiple unit AMX no.4580 which is located at line no.1B, in order to form the train no. 15809 that would run on route Caracal – Corabia .

The movement inspector from the technical group Caracal at 17:46 requires with no.35 free passing, for dispatching the train no. 15809, which was running on route Caracal – Corabia and also with hour 17:46, with no. 40 receives the approval from the movement inspector in station Corabia. At 17:52, based on the departure signal of the train given by the movement inspector on duty with green light hand lamp pointed at the train and the clear indication exit signal, which had the green light and the letter C (Corabia) to destination indicator, the engine driver is running the train no.15809 . On route Caracal – Corabia the train was running without any railway safety issues, arrives in station Corabia at 18:51 and is accepted in line no. I.

At 19:06 the movement inspector on duty from railway station Corabia requires with no. 43 clear passing for dispatching the train no.15812 and pressing the button BDSR SAT km.243+483, and with no.40 at 19:06 clear route is given from the movement inspector from technical group Caracal.

In railway station Corabia the diesel multiple unit AMX no.4580 is stationed in line no. I until 19:20 in order to compose the train no. 15812 that would run on route Corabia – Caracal. At 19:20, based on the departure signal of the train given by the movement inspector on duty with green light hand lamp pointed at the train and the free indication exit signal group F, the engine driver started to run the train no.15812 , was running about 15m and passing the switch no.19 the motor bogie derailed, the first in running direction and the first axle of the bogie no.2 .

(photo 4) .



linia nr.8 - remiza de locomotive

photo no. 4

B.1.1. Derailment process description

At 19,20 based on the departure signal of the train given by the movement inspector on duty with green light hand pointed at the train and the clear indication exit signal group F, engine driver started to run the train no.15812, was running about 15 m, and after passing toe of the switch no.19 running of the motor bogie of the diesel multiple unit no. 4580 on the switch took place as follows:

- The wheel no.1 of the axle no.1 run on the ordered route .1 (straight track), and the wheel no.2 dropped between the stock and switch rail traveling itself in another route (diverging track)
- The axle no.2 and axle no.1 of the bogie no.2 travelled on the same route with the axle no.1.

After running an area of approximately 8,80 m, the axle no. 1 from the motor bogie derailed entailing in the derailment process axle no.2 and axle no.1 of the bogie no.2. The diesel multiple unit AMX no.4580 was running in derailed condition an area of approximately 22,20 m. (see photo no.5)

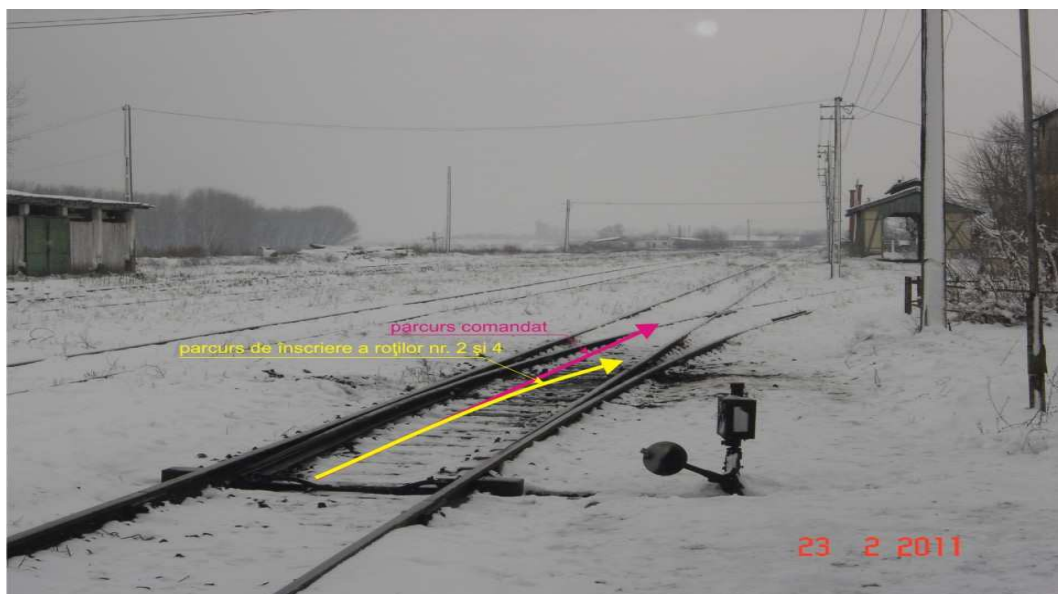


photo no.5

B.2.1. Parties involved

The running section Caracal - Corabia is a simple track non electrified .

The infrastructure and suprastructure of the railway is under the management of SC RC-CF TRANS SRL Braşov and is maintained by the employees of the permanent-way district belonging to SC RC-CF TRANS SRL Braşov, P.L. Corabia.

The interlocking systems (SCB) of railway traffic from railway station Corabia, are under the management of SC RC-CF TRANS SRL Braşov and are maintained by the employees belonging to SC CDC STAR SRL Braşov, P.L. Corabia.

Rail communication systems from railway station Corabia is under the management of SC RC-CF TRANS SRL Braşov is maintained by the employees belonging to SC TELECOMUNICAȚII CFR S.A

Rail communication system from the locomotive is owned by SC REGIOTRANS SRL Braşov and is

maintained by its employees.

The diesel multiple unit which consist the derailed train is the property of SC REGIOTRANS SRL Braşov and is maintained and prepared by its employees, and the repairs are made by SC KRON TRIEM SRL Braşov, P.L. Corabia.

The investigation Commission questioned the involved employees in the rail accident: the engine driver, the movement inspector and the train chief.

B.2.2. Composition and the equipment of the train

The passenger train no.15812 , consist of the motorised train AMX no. 5807, 8 axles, 80 tones, 44 meters, belonging to S.C. REGIOTRANS S.R.L. BRAŞOV running on section Corabia – Caracal.

The pointing and recording speed equipment (tip HASLER), the automatic train protection system (INDUSI) of the diesel multiple unit were active, sealed and operating instructional.

The safety and vigilance devices (DSV) of the diesel multiple unit was in operation and sealed.

B.2.3. Railway equipment

In the area of the railway accident the single turnout no. 19 is type 49, with the radius of 300 m, tangent 1/9, with spring points, right deviation, with access in direct line I and in deviation on line 8 shed. The single turnout no. 19 has metal parts in good condition, complete horizontal and vertical fastenings, with wood sleepers in good condition, with broken track bed complete and compacted.

The single turnout no. 19 is located in a straight line of 39 m length between km 279+810 and km 279+849.

The interlocking system is equipped with key locks without automatic track for controlling the switches position, mechanical panels and key panels.

On 21.02.2011, near the railway accident were not executed works on lines or railway installations.

B.2.4. Communication facilities

The way of communication between the driver and movement inspections was provided by radiotelephone installation.

B.2.5. Start of the railway emergency plan

Right after the occurrence of the railway accident, was not necessary to initiate action plan to remove damage and restore train traffic, the railway accident being noticed by railway accident was advised by the information flow specified in Ch. IV Section 2 of Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania,

The restoration of traffic was performed by staff belonging to SC RC-CF TRANS SRL Braşov and SC REGIOTRANS SRL Braşov, P.L. Corabia .

After approval were present on the site the representatives of SC RC-CF TRANS SRL Braşov – the infrastructure manager, of SC REGIOTRANS SRL Braşov, P.L. Corabia, of Romanian Railway Safety Authority and of Romanian Railway Investigating Body.

B.3. Accident Consequences

B.3.1. Fatalities and injuries- none

B.3.2. Material damages- none

B.3.3. Consequences of the railway accident in railway traffic

Due to the railway accident occurrence train 15812 had a delay of 5 minutes.

B.4. External circumstances

On 21.02.2011, between 19.00 – 20.30, the visibility was good according to the night time, and the temperature was of approximately -1°C.

The visibility of the colour-light signals was according to the provisions of the regulations in force.

B.5 Investigation course

B.5.1 Brief presentation of the involved staff testimonies

(i) From the statement of the engine driver who was driving the AMX 4580, hauling the train no. 15812 dated 21 February 2011 note the following:

- he was on duty on 21 February 2011, hauling the train 15809 on the distance Caracal – Corabia, was received in railway station Corabia with entry signal on open position in line I ;
- he was operating the acknowledge button for the track magnet -influence of 1000Hz;
- he was stabling in the Corabia station with about speed of 15 km / h, with the route properly performed;
- after its arrival in Corabia station he changed the driving cab for hauling the train no. 15812, on the distance Corabia - Caracal;
- was dispatched at 19.15, based on the movement inspector order for running the train and of the clear passing the signal out of the group;
- around 19.16, at the speed of 10-12 km/h he heard a noise under the diesel multiple unit and immediate actioned to stop;
- following the checks he found that the first 3 axles were derailed;
- he noticed that switchpoint lamp indicates that is operated in direct position;

(ii) From the statement of the movement inspector on duty on 21.02.2011 in railway station Corabia, note the following:

- after the departure of the train no. 15810 at 15,25 he made the shunting route for entering the AM 4579 on shed for performing the PTH- (maintenance scheduled operations).
- after performing the PTH he removed it on the shed and introduced it into line 2, then he made the route checkout for entering the train 15809 in line 1.
- after stabling the train 15809 he made the checkout for the exit route for departing the train 15812 on line 1, then he sent the disposals to the railway barriers posts from the current line and station cabins for the departure of the train 15812.
- he got out for dispatching the train 15812, and after the departure of the train, over switch 19, he heard a loud noise and then the driver braked the train.

(iii) From the statement of the chief train, who was on duty on 21.02.2011 on the train 15812, , note the following:

- he departed with the train 15809 from Caracal station and he entered in Corabia station in line I at 18:51 without problems.
- at 19:15 the movement inspector ordered the train departure, and after running approximately 10 m he heard a loud noise under the engine.
- he went to the engine driver and told him that the train derailed.

B.5.2. Safety management system

At the time of the incident, the railway operator, SC. REGIOTRANS SRL Braşov had established its safety management system, having the safety certificate part A no. UE - RO 1120106005 issued by ASFR on 12.02.2010 valid until 14.02.2012.

B.5.3. Norms and regulation. Sources and references for investigation

At the railway accident investigation the followings were taken into account:

- a) regulation for running trains and shunting railway vehicles no.005 approved by MTCT no.1816/2005;
- b) instruction regarding the locomotive staff activity in railway transport no. 201/2007, approved by OMTCT no. 2229/2006.
- c) Technical Plan of Exploitation of the railway station Corabia.
- d) handling instruction of the system SCB.

B.5.4. Functioning of technical equipment, infrastructure and rolling stock

B.5.4.1. Data regarding the equipments

The railway traffic control system is equipped with key locks without automatic track for controlling the switches position, mechanical panels and key panels.

B.5.4.2. Data regarding the lines

In the area of the railway accident the single turnout no. 19 is type 49, with the radius of 300 m, tangent 1/9, with spring points, right deviation, with access in direct line I and in deviation on line 8 shed. The single turnout no.19 has metal parts in good condition, complete horizontal and vertical fastenings, with wood sleepers in good condition, with broken track bed complete and compacted.

The longitudinal section of the line no. I is in a straight line with a maximum gradient of 4,3 ‰, as a slope to Caracal station .

B.5.4.3. Data found in operation of rolling stock and its technical equipment

At the motorised train AMX 4580, which formed the train on 21.02.2011 were found the following:

- air brake: operate normally;
- manual brake: operate normally;
- air compressor: operate normally;
- automatic brake valve type JOYSTYK-MPF: rapid braking position;
- tightness of brake system: good;
- safety and vigilance installation type WACMA: sealed and function;
- the automatic train protection system INDUSI: sealed and function;
- speed recording installation HASSLER: sealed and function;
- radiotelephone installation: operate normally.

B.5.5. Man – machine – body interface

The railway accident from Corabia railway station can be classified as accidents based on human error.

B.6. Analysis and Conclusions

From the analysis of the findings performed at the accident site, of the records of the speed diesel multiple unit involved, of the written statements, also from questioning the movement inspector, the engine driver and the chief train, it can be concluded that the accident occurred in the following conditions:

- On 21.02.2011, the movement inspector on duty requested for the train no.15812 the clear passing no.43 at 19:06 from the movement inspector of the technical group Caracal and was given the clear passing no.40 at 19:06 .
- After obtaining the clear passing the movement inspector on duty did not operate the switch no.19, didn't check the solder between the point and the stock rail, didn't verify the correct performance of the route by the removing the key from the lock and carrying it to the key panel and he dispatched the train no.15812 at 19:20 towards Caracal.
- After departure of the train no. 15812 from railway station Corabia at 19:20 and running about 15m, the engine driver heard a loud noise under the diesel multiple unit.
- the engine driver took measures of breaking and keeping the train stopped, descended of the diesel multiple unit and noticed the axels of the first bogie and axle no.1 of the second bogie in the running direction were derailed.
- The engine driver noticed the movement inspector on duty about what happened, took measures of keeping the train stopped and waited the investigation commission.

From the analysis of existing data and testimony revealed that the movement inspector from railway station Corabia has not complied with the provisions of PTE and the Instruction of handling the installation, regarding the performance and checking the receiving route, concerning the departure of/from in the station.

B.7. Causes of the accident, factors that contributed and root causes

B.7.1. Direct cause

The direct cause of the accident is non bonding the point blade to the stock rail on direct position, which allowed the right wheel of the axle no.1 from the bogie no. 1 (refer to the running direction) to engage in another route than ordered. This was possible by incomplete handling of switch no.19, and non providing it with switch lock.

B.7.2 Underlying cause

The underlying cause of the accident consists in non locking the switch no. 19 which was part of the dispatching route of train no.15812 in contravention with the provisions of art.125 point 2 from Regulation for running trains and hauling railway vehicles no. 005, approved by MTCT no.1816/2005, regarding the receiving / dispatching / passing a train to / from / through the station.

B.7.3. Root cause - none

C. Safety recommendations - none

Measures taken during the investigation

Following the railway accident, according to Art. 63 of the Regulation to investigate accidents and incidents, development and improvement of the railway safety on the rails and on the subway network in Romania approved by H.G. no. 117/2010, the main inspector requested by act no. 4130/249/2011 the suspension of service of the movement inspector on duty in Corabia railway station until completion of the investigation report.

The present Investigating Report will be transmitted to the manager of the public railway infrastructure, to the non-interoperable railway infrastructure manager, to the railway operator and to the Romanian Railway Safety Authority.

Investigation commission members:

POPESCU Nicolae	-	main investigator
PÎRVU Viorel	-	member
GHIDUREA Marian	-	member
SPĂTARU Ionel	-	member