MINISTRY OF TRANSPORTS AND INFRASTRUCTURE
ROMANIAN RAILWAY AUTHORITY - AFER

ROMANIAN RAILWAY INVESTIGATING BODY

INVESTIGATING REPORT

of the railway accident happened on 02.09.2012 in the railway station Barboşi Triaj

Final edition

07.11.2012

NOTICE

Concerning the railway accident happened on 02th of September 2012 in the running of the freight train no. 39547, in the Regional Center for Railway Operation, Maintenance and Repairs Galaţi, running section Barboşi – Tecuci, in railway station Barboşi Triaj, by derailment of the locomotive DA 1566, of the wagon no. 33535304474-6 and of the first bogie of the wagon no. 31535375368-6, Romanian Railway Investigating Body performed an investigation, according to the provisions *Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway network* approved by HG no. 117/2010. Through the performed investigation, the information concerning the occurrence of this accident were gathered and analyzed, the conditions were established and the causes determined.

The investigation of Romanian Railway Investigating Body does not aim to establish the guilty or the responsibility in this case.

Bucharest , 13.11.2012
Approved by
Director
Nicolae SANDU

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

Chief Investigator
Eugen ISPAS

This notice is part of the Investigation Report of the railway accident occured on 2 september 2012 on the range of activity of Regional Center for Railway Operation, Maintenance and Repairs Timişoara Galaţi, consisiting in the derailment of DA 1566, of the wagon no. 33535304474-6 and of the first bogie of the wagon no. 31535375368-6, from the freight train no. 39547 belonging to „SC SERVTRANS INVEST SA", on the running section Barboşi – Tecuci (electrified line).

SUMMARY

I. PREAMBLE

I.1. Introduction

The Romanian Railway Investigating Body being notified by the occurence of the accident defined in accordance with the provisions of ***Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway network***, approved by HG no. 117/2010, hereinafter referred to as Regulation, in accordance with art. 48 paragraph (2), has appointed the president of the investigation committee in order to start the investigation, for establishing the conditions, determine causes and issuing safety recommendations in order to prevent similar accidents causes.

The action of the committee investigation aimed to improve railway safety by issuing recommendations which in any case does not create a presumption of blame or liability for the accident.

I.2. Investigation process

The Romanian Railway Investigating Body, a permanent and independent body, within Romanian Railway Authority, hereinafter referred to as OIFR, was notified on 02.09.2012 by the Central Safety Traffic Inspectorate within Regional Center for Railway Operation, Maintenance and Repairs Galaţi hereinafter referred to as CREIR CF Galaţi about the occurence of the railway accident in the railway station Barboşi Triaj, thru derailment of the freight train 39547 belonging to the railway undertaking SC Servtrans Invest SA.

Considering that the facts occurred are defined as a railway accident according to the provisions of art. 3, point l from Law 55/2006 regarding railway safety and of art.7, paragraph (1), point b) of *Regulation* and this accident is relevant for the railway system, under article 19 paragraph (2) of Law no. 55/2006, in conjunction with article 48, paragraph 1 of *Regulation,* in order to prevent the occurence of accidents determined similar causes, OIFR opened an investigation in order to establish conditions, determine causes and issuing safety recommendations. Thus, by decision no.94 of 04.09.2012 of the OIFR Director, the investigation committe was appointed and consisting of:

- Doru Cătălin TOADER, investigator OIFR - investigator in charge;
- Georgel MIDRIGAN, regional safety inspector on CREIR CF Galaţi - member;
- Ştefan MIHAI, regional safety inspector on CREIR CF Galaţi - member;
- Sorin ZAHIU, head of Transport Section on SC Servtrans Invest SA - member;
- Ion ALEXANDRU, driver trainer on SC Servtrans Invest SA - member.

In this accident were no injured or casualties.

At the site of the accident were present representatives of: Romanian Railway Safety, National Railway Company „CFR" SA and „SC SERVTRANS INVEST SA".

A. ACCIDENT BRIEF PRESENTATION

A.1. Brief presentation

On 02.09.2012, at 03.15, from the halt Barboşi Port the freight train no. 39547 was dispatched to railway station Barboşi Călători, composed of 39 empty wagons hauled with the locomotive DA 1566, owned by SC CONSTANTIN GRUP SRL, which was drived by the engine driver and the head of train owned by SC SERVTRANS INVEST SA. The train was running according to the disposal no.18 of 01.09.2012, hour 22:48, sent by operator from the Traffic Controller Galaţi to the railway stations Barboşi Triaj, Barboşi Călători and movement halt Barboşi Port, ordering the train running no. 39547 to the railway station Mălina (belonging to industrial railway lines SC Arcelor Mittal Steel SA).

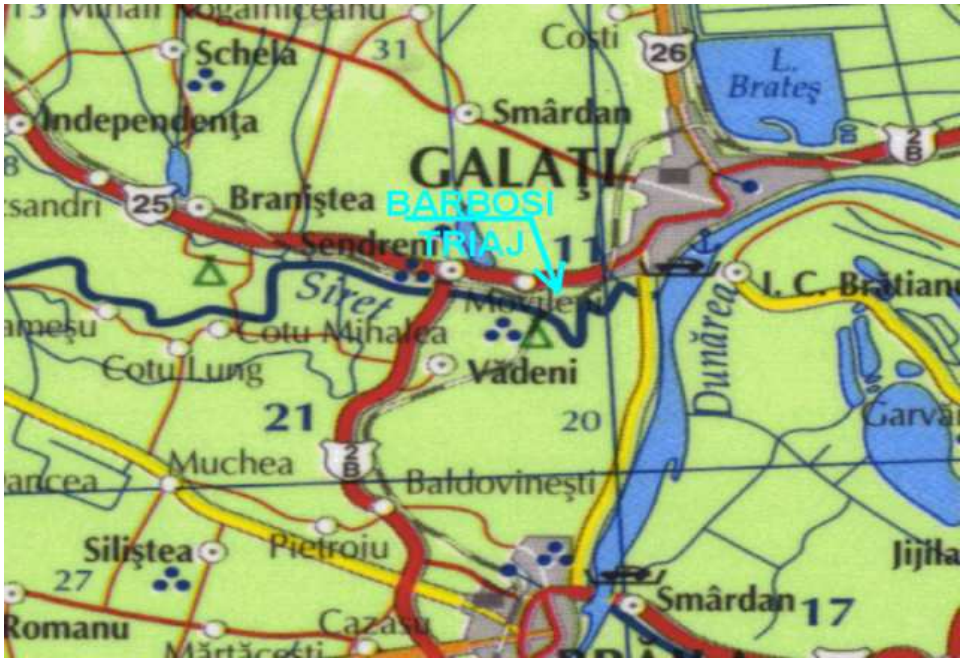

fig.1 – the site of the accident

At 03.33, the local station movement inspector from railway station Barboşi Călători requested and obtained a free pass system for train no. 39547 from the local station movement inspector from railway station Barboşi Triaj. After passing the train at 03:52 thru railway station Barboşi Călători, on route Barboşi Ramificaţie Port – Barboşi Ramificaţie Siret to Ramificaţie Barboşi Triaj Post 14, the engine driver stopped the train at 04:03'30", at an approximately 103 meters before the entry signal YG2 belonging to station Barboşi Triaj.

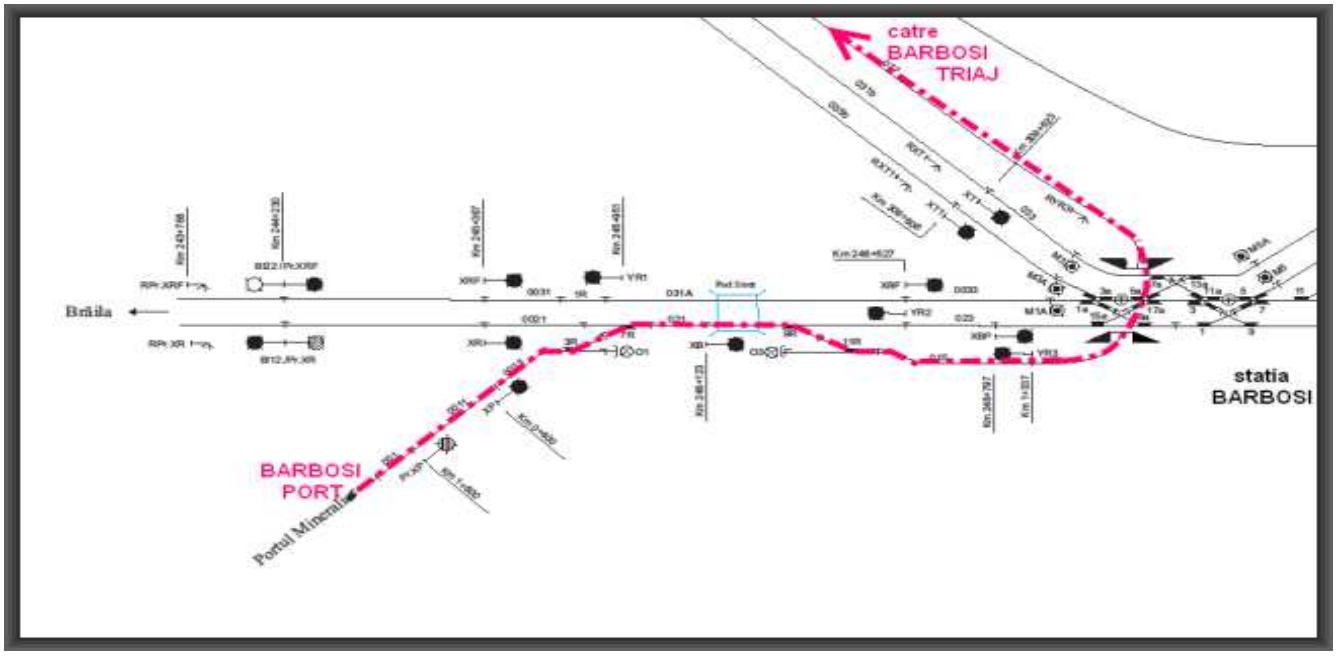

fig.2 – train route to the site of the accident

After stopping about 1 minute before the entry signal YG2, the engine driver started to run the train a and pressed the button for the ordered passing a signal in the stop position of the automatic speed control system passing the signal YG2 which had the unit of light of bright red color, of the corresponding indication „*STOP without passing the signal!*". The train entered on a route over the isolated section 054G, switches 18G and 12G, to the avoiding line of switch no. 12G, to the buffer stop O4, which was destroyed and left the running track about 35 meters.

Following this route derailed: locomotive DA 60-1566-3 with all axles, first wagon of the locomotive with all axles (no. 33535304474-6) and the second wagon of the locomotive with the first axle of the first bogie (no. 31535375368-6).

Since the last stop of the train in front of the signal YG2 and until the leaving the running track, the locomotive DA1566 was running with an incresing speed up to 26,4 km/h, in the conditions in which on the entire distance the running of the trains was restricted to the speed level of 5 km/h. This speed restriction was provided in The Sheet for Approval the Speed Restrictions (BAR) for the period of 1-10 september 2012, at page 40, line 708G, no. 1.

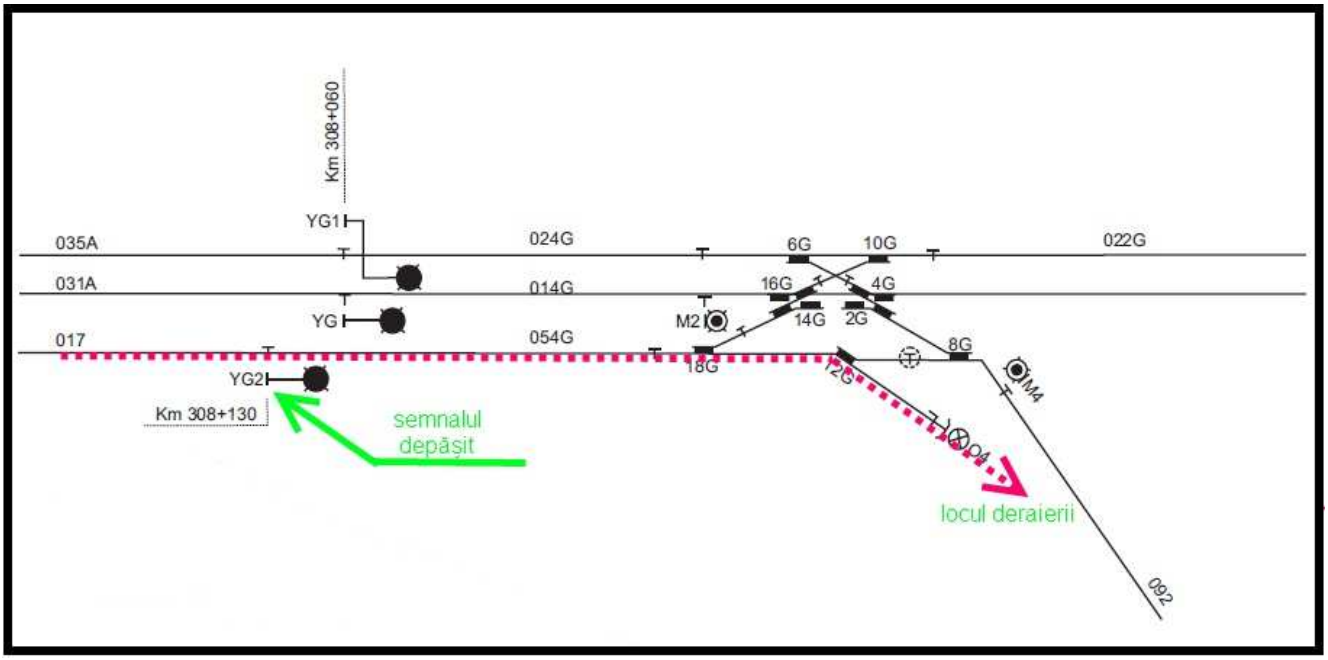

fig.3 – passing the signal by the engine driver and the site of the derailment

Following this accident were no injured or casualties.

A.2 Accident causes

A.2.1 Direct cause

The direct cause of the accident is leaving the running track as a result of entering the train no.39457 on a not allowed route and passing over a buffer stop following the engine driver's decision of the locomotive DA1566 not to comply with regulations on passing a signal (YG2) whose indication was „STOP *without passing the signal!*".

A.2.2. Underlying causes

We identify the following underlying causes:

a) the absence of communication by radiotelephone of conditions of the entry, passing and exit the station and mutual confirmation between the station movement inspector and the train's driver, according to article 189 of *Regulation for running trains and shunting the railway vehicles no. 005*, approved by OMTCT no.1816 from 26.10.2005 as amended, the CFR Department's Order no.*36/155/1979* and article 136 paragraph (1) of *Instructions for locomotive's staff activity in railway transport – no. 201*, approved by OMTCT no. 2229 from 23.11.2006;

b) running train no. 39547 with an unsuitable speed, as a result of non compliance by the driver with the provisions on maximum speed admitted in line of 5km/h specified in The Sheet for Approval the Speed Restrictions (BAR) for the period of 1-10 september 2012, thus violating provisions of article 125 paragraph (1) of *Instructions for locomotive's staff activity in railway transport – no. 201*, approved by OMTCT no.2229 from 23.11.2006;

c) non performance by the disposing station movement inspector of the orders from the interlocking system point switches and signals to ensure early the train route no. 39547, according to article 185 and article 204, letter e, of *Regulation for running trains and shunting the railway vehicles no.005*, approved by OMTCT no.1816 from 26.10.2005 as amended;

d) the use by the railway undertaking of radio frequency improper to distribution panel in their work area, task specified at paragraph 2.3 of *Instruction regarding the efficient use of*

radiotelephone equipment, maintenance, operative breakdown repairs and their repair approved by the Departmental Council with no. 322 from 26.02.1975.

A.2.3. Root causes

The root cause is the lack of unitary and actualized reglementation regarding the instruction and authorization of operation, repair and maintenance staff, regarding the conditions of use of fixed radiotelephones, mobile and portable, which are applicable to all participants in the railway transport.

A.3. Severity level

According to the clasification of accidents under article 7 of „Regulation for the investigation of the accidents and incidents, for the development and improvement of Romanian railway and subway network", approved by HG 117/2010, the act is classified as a railway accident under article 7, item 1, letter b.

A.4. Safety recommendations

Since in well-defined circumstances in regulations and instructions used in running trains and shunting movements of train sets, communications by radiotelephone equipments constitutes *orders* or *disposals* which completes given orders through indication's signals used in signalisation to the romanian railway, the actualisation is recommended or, by case, issuing specific reglementations applicable to communications of railway transport, to ensure the reglementation and uniform aplicability of principles and rules for using the networks in railway transport, repartition of frequencies and also of conditions for instruction and authorization of staff which operates fixed radiophones, mobile and portable, aplicable to entire participants of railway transports (infrastructure manager, railway undertaking and railway provider.)

This investigation report will be sent to Romanian Railway Safety Authority, National Railway Company „CFR" SA, services provider SC TELECOMUNICAŢII CFR SA, also the railway undertaking SC SERVTRANS INVEST SA.

B. INVESTIGATION REPORT

B.1. Accident presentation

On 02.09.2012, in the halt Barboşi Port, was composed freight train no. 39547 which was dispatched at 03.15 to railway station Barboşi Călători. The train was composed of 39 empty wagons (148 axles), 854 gross tons, automatic braked weight percentage assured (884 real braked tons towards 427 necessary braked tons), braked weight percentage for keeping the train stopped (780 real braked tons towards 94 necessary braked tons), with a length of 631 meters. The train was hauled with the locomotive DA 60-1566-3, owned by SC CONSTANTIN GRUP SA drived by the engine driver and the conductor belonging to SC SERVTRANS INVEST SA. In the driver's cab 2 there were also a shunter and a examiner.

The train was running based on the disposition no.18 transmitted on 01.09.2012 at 22.48 by the traffic controler of the railway stations and halts of running section no.1 of the Traffic Regulatory Galaţi (including railway stations Barboşi Triaj, Barboşi Călători and halt Barboşi Port) in which the running of the train 39547 was mentioned, in the timetable conditions of train no. 39353 (on route Barboşi Port - Barboşi Ramificaţie Port – Barboşi Ramificaţie Siret - Ramificaţie Barboşi Triaj Post 14 – Barboşi Triaj gr. A), to the railway station Mălina, belonging to industrial railway line SC Arcelor Mittal Steel SA.

At 03:33, the local station movement inspector from station Barboşi Călători requested and obtained a free pass system for train no. 39547 from the local station movement inspector from station Barboşi Triaj. After passing of the train through the railway station Barbosi Calatori, recorded by the local station movement inspector at 03.52, the driver stopped the train at 03:53'30" with the locomotive in the right of the workshop belonging to SIRV Barbosi, because the examiner had to descend. After 1 minute stop the driver started the train, run for a distance of ca. 540 m with a maximum speed of 8,7 km/h, until 03.59'30", when the train stopped an remaind for 1 minute, after that the train started to run at 04.00'30", running on a distance of 800 m with a maximum speed of **29 km/h** until 04.03'30", while the movement speed on this distance of the line was restricted to a maximum of **5km/h**,

prescribed in The Sheet for Approval the Speed Restrictions (BAR) for the decade 1-10 September 2012.

Noting the „red" indication (*STOP, without to exceed the signal!*) from the YG2 signal, the driver stopped the train at a distance of ca. 103 meters before that, requesting to the train conductor to contact the movement inspector from the railway station Barbosi Triaj. The driver and the conductor stated that, at the request of the conductor they heard in the radiotelephone station the communication „*get out of there further to Mălina station*", this communication being heard also by the shunter which was in the cab II of the locomotive. The disposing station movement inspector and also the local station movement inspector from the railway station Barbosi Triaj stated that they haven't been contacted through radiotelephone by the driver or conductor, but that they didn't communicate those the entry and passing conditions of the train, according to the regulation for train traffic, their motivation being that the train had to come later, and the performing of the passing commands could restriction the shunting movements or a possible dispatch of the solo locomotives from the station.

After a stationing of 1 minute, at a distance for about 103 meters before the entry YG2 signal, the driver put the train in motion, overpassed the YG2 signal, which had the light unit with red color on, corresponding to the indication *"STOP, without to exceed the signal!"*, and actioned the button for exceeding order of the automatic control installation of the speed of the train. The train got on a route that was not prepared and commanded by the disposing station movement inspector, formed of the isolated section 054G, switches 18G, 12G and the avoiding line which branched from the switch no. 12G. After running this last distance, the train destroyed the buffer stop O4 and left the running track, running on ground for about 35 meters, derailed with all axles from the locomotive DA 1566 and of the first wagon after that, and also the first axle from the first bogie of the second wagon from the locomotive.

On a distance for about 500 meters, between the place of the last stationing in the front of the YG2 signal and to the derailment place, the train increased the speed having at the impact with the fixed impact stop **26,4 km/h**, in the conditions in which on the line between the stationing place of the train in front of the YG2 signal and the switch 18G restrictioned at the value of **5 km/h,** this speed restriction being provided in The Sheet for Approval the Speed Restrictions (BAR) for the decade 1-10 September 2012.

Following this accident were no injured or casualties.

B.2. Accident circumstances

B.2.1. Parties involved

The railway station Barbosi Triaj, were the railway accident happened is managed by CNCF „CFR" SA and maintained by its employees.

The infrastructure and superstructure involved are managed by CNCF „CFR" SA and maintained by the employees of L1 Section Galați from CREIR Galați.

The interlocking system for the trains running in the railway station Barbosi Triaj are managed by CNCF „CFR" SA and maintained by the employees of L1 Section Galați from CREIR Galați.

The railway communication facilities from the railway station is managed by CNCF „CFR" SA and is maintained by the employees of SC TELECOMUNICATII CFR SA.

The railway communication facilities from the locomotive DA 60-1566-3 is owned by SC CONSTANTIN GRUP SRL and is maintained by the companies specialized in communication equipments.

The locomotive DA 60-1566-3 is owned and maintained by SC CONSTANTIN GRUP SRL and the first two wagons from the locomotive which derailed (335353244746 – first, 315353753686 – second) are owned by SC SERVTRANS INVEST SA and the maintaining, repairs and inspections are done by the companies authorized as railway suppliers.

The investigation commission questioned the employees involved the driving of the locomotive, the responsible of the railway traffic and the indirect witnesses, those being the driver, conductor from the train, the disposing station movement inspector and the local station movement inspector from the

railway station Barbosi Triaj and the shunter which was in cab II from the locomotive in the moment of the accident occurrence.

B.2.2 Composition and the equipments of the train

The freight train no. 39547 was composed of 39 empty wagons (148 axles), 854 tons, automatic braked necessary/real: 427/884 tons, hand brake necessary/real: 94/780 tons, with a length of 631 meters and run on the distance Barboşi Port – Mălina.

The safety and warning device and the speed recording and indicating installation (system type HASLER RT 12I) from the locomotive equipment DA 60-1566-3 were active, sealed and in action.

The automatic train protection system (INDUSI) from the locomotive DA 60-1566-3 was sealed and active.

B.2.3. Railway equipments

Track embankment description

- the railway line is with standard gauge (1435 mm);
- in the front of the YG2 signal the line is with alignment on a distance of 673 m;
- between the YG2 signal and the switch no. 18G exist a curve with a radius of 1250 m, left deviation;
- in deflecting position, the switch no. 12G give access to the avoiding line which is in curve with left deviation;
- the switch no. 18G is type 49-300-1/9, left, articulated points;
- the switch no. 12G is type 49-300-1/9, left, articulated points;
- the traffic speed admitted on the line section between the switch no. 9R Barboși Călători and 18G Barboși Triaj is of 5 km/h;
- the line section between the entry signal YG2 and the buffer stop O4 has a length of 362 m.

Safety systems for managing rail traffic description

The railway station Barboși Triaj is equipped with electrodynamic interlocking system type CR3, with track diagram separated for Group A and Post 14, command desk for group B.

The isolated section I AD from the front in the entry signal YG2 from the railway station Barboși Triaj is delimited by the entry signal YR3 from the railway station Barboși Călători and has a length of 1850 m. The isolated section II AD afferent to the YG2 signal is delimited by the entry signal YR3 and the switch 11R from the railway station Barboși Călători and has a length of 400 m.

B.2.4. Communication facilities

For the communications and confirmations between the movement offices and the driving posts of the locomotive are used mobile and fixed radio telecommunication installations which doesn't have the possibility to record the calls and to storage the informations.

B.2.5. Start of railway emergency plan

After the railway accident and the first investigations in the site, the 37 non derailed wagons were shunted on line 11A from the railway station Barboși Triaj, action finalized on the 02nd of September 2012 at 11.26 and had as effect the resumption of the traffic on the current line between Barboși Călători – Barboși Triaj (section Barboși Ramificație Siret – Ramificație Barboși Triaj Post 14). The traffic between the railway stations Barboși Călători and Barboși Triaj wasn`t closed after the railway accident because the freight trains which arrived from railway station Barboși Port could run between those stations on the lines „Section loop 1" and „Section loop 2".

The rerailing action of the two derailed wagons finalized on the 04th of September 2012, around 15.00. The rerailing works at the locomotive took place on the 10th of September 2012, between 07.00 – 16.00.

B.3 Accident consequences

B.3.1 Fatalities and injuries

None

B.3.2. Material damages

Following the accident resulted material damages:

- at lines: it was destroyed the the buffer stop O4. The value of the damage is **1981,00** lei, according to the estimation no. 12/284/2012, made by L1 Section Galati;
- at installations:
  - the destruction of the afferent installation from the buffer stop O4 (buffer stop and the cable from the picket to the buffer stop);
  - the cables 231.33.12x1.37 and 231.1.4x1.37 from DA2 to CDC 092 were cut;

  The value of the damage is of **324,68** lei, according to the estimation no. 704/CT1/1596/05.09.2012, made by CT1 Section Galați.
- at the rolling stock - **54.503,38** lei from which:
  - **1.285,41** lei according to the estimation no. RVB/698/07.09.2012 made for the wagon no. 315353753686;
  - **2.136,18** lei according to the estimation no. RVB/703/07.09.2012 made for the wagon no. 335353754746;
  - **51.081,79** lei according to the estimation no. 6/906BIS/2012 made for the Diesel locomotive no. 60-1566-3.
- other damages: **25.559,09** lei, representing the value of the rerailing works for the wagons and the locomotive and of the reading of the speed recording tape.

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

The traffic between the railway stations Barboși Călători and Barboși Triaj was not closed after the railway accident because the freight trains which arrived from Barboși Port could run between those stations on the lines „Section loop 1" and „Section loop 2".

B.4. External circumstances

At the 02nd of August 2012, at 4.00, before the accident occurrence, the temperature in the air was of +14°C, the sky was partially covered, without precipitation, the visibility of the light signals was in accordance with the provisions of the specific regulations in force.

B.5. Investigation course

B.5.1. Summary of the involved staff testimonies

From the testimonies of the **driver** which was on duty on the 01st/02nd of September 2012 on the Diesel locomotive 60-1566-3, it can be retain the following:

- he was on duty on duty on the locomotive DA 60-1566-3 from 19.00 to 07.00;
- he inspected the safety and the automatic train protection system (INDUSI) and they function normally;
- he inspected the radio telecommunication installation and it was function normally („*it sounded very good*");
- he run in normal conditions until the last stop before the railway station Barboși Triaj but he stopped at the railway station Barboși Călători because the examiner need to get out;
- he stop in front of the YG2 signal which indicated „red" from a distance for about **10 m**;
- after ca. 2 minutes from stop, seeing that the movement inspector from the railway station Barboși Triaj didn't communicate anything, he took the decision to delegate the conductor to call the movement inspector and to transmit that the train is in front of the signal;
- after he got the confirmation from the movement inspector with the expression „*get out of there further to Mălina*", he asked the conductor what to do and this one confirmed him that „*we can pass over the stop signal*";
- he supplied the train with air, it begun to run and passed over the YG2 signal which indicate „red", auctioning the button for exceeding order;
- he was confident that the movement inspector from the railway station Barboși Triaj respond at the radio telephone station, being motivated that in the same shift he communicated with him, but he didn't made a statutory recognition;

- he communicated on the radio frequency no. 1 allocated for the train traffic, but it was also used by the shunting employees from the railway station Barboși Port;
- he is convinced that he didn't confuse or interpreted his communications with the movement inspector from the railway station Barboși Triaj with the communications from the shunting activities from Barboși Port;
- he passed over other signals which indicated „red" (*on stop*) at the request the movement inspector, this being an usual type of activity in the railway station Barboși Triaj;
- he based on the radio communication with the movement inspector, being convinced that the route was prepared by this, but a failure at the traffic YG2 signal require the pass over that;
- he exceed the speed admitted in The Sheet for Approval the Speed Restrictions (BAR) of 5 km/h, being motivated that the train was composed from 39 wagons and observed that on the route from Barbosi Port the *„length of the train was of 670 m and the rails were a little bit wet and it was following a curve on right and an incline overcome*" so *„I had to push a bit more*";
- he saw branches in front of the windscreen and entered the "parapet" after a few minutes after the overcoming YG2 signal;

From the testimonies of the **conductor** which was on duty on the 01st/02nd of September 2012 on the train no. 39547, it can be retain the following:
- he was on duty on duty on the train no. 39547 in the locomotive's cab;
- he noticed that the signal before the YG2 signal had an „yellow-yellow" indication;
- he inspected the radio telecommunication installation and it was function normally (*„it sounded very good*");
- he stop noticed that the YG2 signal indicated „red";
- he was requested by the driver to call the movement inspector from the railway station Barboși Triaj;
- he called many times the railway station Barboși Triaj and after that he got the confirmation with the expression *„get out of there further to Mălina*",
- he didn't communicate that to the driver, because he was beside him and heard the communication;
- he recognized the voice of the movement inspector from the railway station Barboși Triaj, because *„at the entry on duty it talked with someone else from group B"* and he knows him in person because *„10 years since as I worked at SC Servtrans Invest SA I was in the movement office with work problems*" he asked the conductor what to do and this one confirmed him that *„we can pass over the stop signal*";
- he got outside of the movement office (at the window) to communicate the movement inspector of the railway occurrence, in that moment it seemed that the physical state of the movement inspector was *„dubious, it smelled alcohol in the movement office*";

From the testimonies of the **shunter** which was on duty on the 01st/02nd of September 2012 and which was present in the cab no. II of the locomotive DA 60-1566-3, at the time of the hauling of the train no. 39547, it can be retain the following:
- in the running of the train no. 39547 there were 2 stops (one in the front of the workshop, were the examiner descend, and the second in the front of the entry signal from the railway station, where the train stopped for about 5 minutes);
- the radio telecommunications from cab II functioned on frequency channel no. 1;
- he heard through the radio telephone when the conductor yelled at the railway station Barboși Triaj many times with the expressions *„Triaj! Marius!*", *„Come on, put on free after the Branch!*" and after the train stopped, later, the movement inspector answered with the expression *„get out of there further*", without to say the number of the train or the name of the train conductor;
- he heard through the radio telephone that the conductor called the movement inspector before and after the stop of the train in the front of the entry YG2 signal;

From the testimonies of the **disposing station movement inspector** which was on duty on the 01st/02nd of September 2012 in the railway station Barbosi Triaj, it can be retain the following:
- it was informed from the local station movement inspector that at 3.52, from the passing of the train no. 39547 through the railway station Barboși Călători;
- after he got the notice of departure for the train no. 39547 from the railway station Barboși Călători, he noticed that the section II AD signalized the state „occupied" on the track diagram, knowing that

this being the train running and wait the release of the Section IIAD for the approaching of the train to the YG2 signal;
- he noticed that around 04.12 the isolate section 054G was occupied (located between the YG2 signal and the switch 18G) and then were immediately occupied the sections 12G, 2G-16G, 6G-10G, 14G-18G, 8G, 092;
- he didn't performed any communication through radiotelephone with the driver or the conductor of the train no. 39547 and he didn't get any request from those before the railway accident occurrence;
- he didn't communicate to the locomotive driver the entry and passing conditions in/through the station, justifying that he wait the approaching of the train on the entry signal, the moment of the approaching of the train being considered to be after the release of the IIAD Section;
- he noticed that the IIAD section wasn't released neither after the occupation of the section 054G;
- it didn't exist a reason which could not permitted to put on free the entry YG2 signal, from the point of view of the traffic of other trains, shunting or the statement of the CED installation and was not necessary to perform any route incompatible with the entry route of the train no. 39547, after he got from the local station movement inspector the information of the train no. 39547 passing through the railway station Barboși Călători;
- he didn't put on free the entry YG2 signal because of the long distance that the trains are running on „Ramificaţie Pod Siret" and the potentially need to performed any others running routes incompatible with the route „commanded" by the entry YG2 signal;
- he didn't left the movement office and was the only person which manipulated the interlocking and communication installations existent in the movement office, after he got from the local station movement inspector the information of the passing of the train no. 39547 through the railway station Barboși Călători;
- he consider that he could put on free the YG2 signal for the entry for the train no. 39547 after the release of the section IIAD or at the communication from the driver through radiotelephone about the approaching of this to the entry signal;
- the disposing station movement inspector sustained that „*he wasn't contacted through radiotelephone by the driver and the conductor of the train no. 39547*".

From the testimonies of the **local station movement inspector** which was on duty on the 01st/02nd of September 2012 in the railway station Barbosi Triaj, it can be retain the following:
- he informed twice the disposing station movement inspector about the passing of the train no. 39547: first time at the request for free track to the railway station Barboși Călători (aware of the disposing station movement inspector with signature) and then after getting the departure-passing notice from the railway station Barboși Călători, at 3.53;
- he found out that the train no. 39547 came in the station after a shorter period of time then normally, occupying on the track diagram the first two sections after the YG2 signal, without that the signal being manipulated by the disposing station movement inspector;
- nothing was communicated to the driver/conductor of the train from the disposing station movement inspector through radiotelephone;
- he heard through the radio telecommunication only the shunters of SC SERVTRANS INVEST SA from Barboși Port, which performed shunting movements at that time and the frequency which they used was that from channel 1 (for the train traffic);
- he was telephonic advised, around 4.15 by a representative of SC SERVTRANS INVEST SA, other than the train staff, for the entry through the YG2 signal and derailment of the locomotive;
- he moved at the accident place to established the extent of the railway accident, after that he informed telephonic the station master, the dispach shift master and the station instructor.

B.5.2 Safety management system

To realize the activities and responsibilities, CNCF "CFR" SA, as manager of the railway infrastructure, and the railway undertaking SC SERVTRANS INVEST SA had implemented its own railway safety management system.

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

In the investigation of the railway accident one took into account following:
- questionnaires of the employees involved in driving of the rolling stock and performing of the railway traffic;

- *Signalizing regulation – no. 004*, approved through by Minister of Transports, Constructions and Tourism's Order no.1482 from 04th of August 2006;
- Regulations for the train running and railway vehicle shunting no. 005, approved by Minister of Transports, Constructions and Tourism's Order no. 1816 from the 26th of October 2005;
- Braking and hauling Regulation, no. 006/2005;
- *Instructions for the activity of locomotives staff in the railway transport – no. 201*, approved through OMTCT no. 2229 from 23th of November 2006;
- *Instructions for using the vigilance and safety and speed control points installations*, approved through Order no. 17DA/610/1987 of DTV;
- *Instruction for the automatic train protection system INDUSI Ed. 1972*.
- *Instruction for efficient using of the radiotelephone installations and the maintenance operative breakdown repairs and the repairs of those,* approved by Departmental Council with no. 322 from the 26th of February 1975.

B.5.4. Functioning technical installations, infrastructure and rolling stock

B.5.4.1. Data found on installations

The members of the investigation commission found out that the safety installations for the direction of the railway traffic were in normal operation and sealed.

B.5.4.2. Data found on lines

The speed is restricted at 5 km/h on the line section between the switch 9R of the railway station Barboși Călători and 18G of the railway station Barboși Triaj.

B.5.4.3. Data found at functioning of rolling stock and its technical installations

The freight train no. 39547 was composed of 39 empty wagons (148 axles), 854 tons, automatic braked necessary/real: 427/884 tons, hand brake necessary/real: 94/780 tons, with a length of 631 meters and run on the distance Barboşi Port – Mălina.

The vigilance and safety device and the speed recording and indicating installation (system type HASLER RT 12I) from the locomotive equipment DA 60-1566-3 were active, sealed and in action.

The automatic train protection system (INDUSI) from the locomotive DA 60-1566-3 was sealed and active.

B.6. Analysis and conclusions

After analyzing the testimonies of the involved employees, one can conclude that the railway accident happened in the following conditions:

1. the lack of sincerity of the train driver and conductor on the matter of the driving of the locomotive DA 60-1566-3n the reading of the speed recording tape indicated the stop of the train at a distance of 103 m in front of the YG2 signal and not in the near of that, as both members of the train no. 39547 staff sustained;

2. the rush auto-imposed of the driver in the driving of the train no. 39547 by running at a speed much higher (27,5 km/h) than the permissible limit (5km/h) on the entire distance from Barboși Port and to the last stop, though he was aware of the provisions of The Sheet for Approval the Speed Restrictions (BAR) for decade 1 - 10 September 2012;

3. absence of a credible motivations of the driver in the overcome of the YG2 signal, which ordered stopping, the statement that he had similar cases in other traffic sections are unverifiable;

4. the lack of attention of the driver in complying with regulations on trains and radio communications, based on his lack of notification that the train has entered on a route with access on the avoiding line and his conviction that he is on a route correct performed by the movement inspector. This aspect is evidenced by the fact that the braking distance was not done on a useful distance to avoid damaging the buffer stop O4 and the derailment of the railway vehicles from the train composition;

5. the disposing station movement inspector did not followed closely the instructions and did not notice the light-isolated section IIAD release for:
   - to perform the route with the YG2 signal on free after getting the noticece departure-passing from the railway station Barboși Călători, the entry route of the train no. 39547, contrary to the

provisions of **art. 185** and **art. 204, lit. e**, from the *Regulations for the train running and railway vehicle shunting no. 005*, approved by Minister of Transports, Constructions and Tourism's Order no. 1816 from the 26th of October 2005, as amended;

- to perform to the driver the imposed communications by the provisions of **art. 189** of the *Regulations for the train running and railway vehicle shunting no. 005*, approved by Minister of Transports, Constructions and Tourism's Order no. 1816 from the 26th of October 2005, as amended and of the *Instruction for efficient using of the radiotelephone installations and the maintenance operative breakdown repairs and the repairs of those* no. 322/1972;

6. using the traffic frequency in the shunting activity by the railway transport operators which performed shunting movements in the adjacent railway stations (Barboși Port);

7. performing of radio communications (denied by the disposing station movement inspector and the local station movement inspector) which didn't had recognition calls between the train staff and the movement inspector, for the data necessary to identify the train and the signal which had to be overcome;

From analyzing the pieces from the investigation file resulted also the following aspects which didn't caused the railway accident and are not connected with this:

a. from 3:54'30" the driver put the train in motion covering a distance of approx. 540 m with a maximum speed of 8.7 km/h until 03.59'30" when the train was stopped and stationed 1 minute, then begun to run until 04.00'30" covering a distance of 800 m with the maximum speed of 29 km/h until 04.03'30" (provided that the portion of the line for 1340 m is included on the line between the switch 9R from the railway station Barboşi Călători and the switch 18G from the railway station Barboşi Triaj, for which the speed was restricted to the value of 5 km/h, the speed restriction is provided in The Sheet for Approval the Speed Restrictions (BAR) for the decade 1 - 10 September 2012). It thus exceeded the speed restriction by train no. 39547, previously to the overcoming of the YG2 signal and unrelated to the railway accident, which is framed as railway incident under Article 8, Group A pct. 1.7 from the Regulation.

b. when he got in the movement office from the railway station Barboşi Triaj, following the advice of the railway accident, the station master has compiled a Minutes of findings of the physical state of the disposing station movement inspector and the local station movement inspector, which he signed it together with those and is it showing that their condition was good, the reactivity of the ampoule remained not green, without to mention the time of the verification. At the notification of the conductor of the train involved in the railway accident which went to the movement office after the accident occurrence and the request of the representative of SC Servtrans Invest SA, present on site to conduct research until the arrival of the first members of the investigation commission, was checking all staff involved, revealing the fact that the disposing station movement inspector was under the influence of alcohol at 8.03. He declared that he was free of duty (the handed-over the duty at 5.20) and that he consumed a beer at 7.30 outside the railway station Barboşi Triaj.

B.7. Accident causes

The direct cause of the accident is leaving the running track as a result of entering the train no.39457 on a not allowed route and passing over a buffer stop following the engine driver's decision of the locomotive DA1566 not to comply with regulations on passing a signal (YG2) whose indication was „STOP *without passing the signal!*".

B.7.1. Underlying causes

We identify the following underlying causes:

a) the absence of communication by radiotelephone of conditions of the entry, passing and exit the station and mutual confirmation between the station movement inspector and the train's driver, according to article 189 of *Regulation for running trains and shunting the railway vehicles no. 005*, approved by OMTCT no.1816 from 26.10.2005 as amended, the CFR Department's Order no.*36/155/1979* and article 136 paragraph (1) of *Instructions for locomotive's staff activity in railway transport – no. 201*, approved by OMTCT no. 2229 from 23.11.2006;

b) running train no. 39547 with an unsuitable speed, as a result of non compliance by the driver with the provisions on maximum speed admitted in line of 5km/h specified in The Sheet for Approval the Speed Restrictions (BAR) for the period of 1-10 september 2012, thus violating provisions of

article 125 paragraph (1) of *Instructions for locomotive's staff activity in railway transport – no. 201*, approved by OMTCT no.2229 from 23.11.2006;

c) non performance by the disposing station movement inspector of the orders from the interlocking system point switches and signals to ensure early the train route no. 39547, according to article 185 and article 204, letter e, of *Regulation for running trains and shunting the railway vehicles no.005*, approved by OMTCT no.1816 from 26.10.2005 as amended;

d) the use by the railway undertaking of radio frequency improper to distribution panel in their work area, task specified at paragraph 2.3 of *Instruction regarding the efficient use of radiotelephone equipment, maintenance, operative breakdown repairs and their repair* approved by the Departmental Council with no. 322 from 26.02.1975.

B.7.3. Root causes

The root cause is the lack of unitary and actualized reglementation regarding the instruction and authorization of operation, repair and maintenance staff, regarding the conditions of use of fixed radiotelephones, mobile and portable, which are applicable to all participants in the railway transport.

C. SAFETY RECOMMENDATIONS

Since in well-defined circumstances in regulations and instructions used in running trains and shunting movements of train sets, communications by radiotelephone equipments constitutes *orders* or *disposals* which completes given orders through indication's signals used in signalisation to the romanian railway, the actualisation is recommended or, by case, issuing specific reglementations applicable to communications of railway transport, to ensure the reglementation and uniform aplicability of principles and rules for using the networks in railway transport, repartition of frequencies and also of conditions for instruction and authorization of staff which operates fixed radiophones, mobile and portable, aplicable to entire participants of railway transports (infrastructure manager, railway undertaking and railway provider.)

This investigation report will be sent to Romanian Railway Safety Authority, National Railway Company „CFR" SA, services provider SC TELECOMUNICAŢII CFR SA, also the railway undertaking SC SERVTRANS INVEST SA.

Members of the investigation commission:

- Doru Cătălin TOADER, investigator OIFR - investigator in charge;
- Georgel MIDRIGAN, regional safety inspector on CREIR CF Galaţi - member;
- Ştefan MIHAI, regional safety inspector on CREIR CF Galaţi - member;
- Sorin ZAHIU, head of Transport Section on SC Servtrans Invest SA - member;
- Ion ALEXANDRU, driver trainer on SC Servtrans Invest SA - member.