

Translation from Bulgarian



# REPUBLIC OF BULGARIA

MINISTRY OF TRANSPORT, INFORMATION TECHNOLOGY AND  
COMMUNICATIONS

DIRECTORATE

AIRCRAFT, MARITIME AND RAILWAY ACCIDENTS INVESTIGATION  
UNIT

SPECIALIZED UNIT FOR INVESTIGATION OF ACCIDENTS AND  
INCIDENTS IN THE RAILWAY TRANSPORT

ANNUAL REPORT



2012

The present report is published in accordance with:

- Directive 2004/49/EC;
- Law on the railway transport, 2000, promulgated, effective from 21.06.2011;
- Ordinance № 59, 2006, prom., effective from 07.06.2013.

These legal acts are accessible at: <http://www.mtffc.government.bg/page.php?category=390&id=2569>



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## INTRODUCTION

**Operational Programme on „Transport“ 2007-2013** (OPT) is one of the seven operational programmes of the Republic of Bulgaria that is financed from Structural and Cohesion Funds of the EU EC. The operational programme with the largest budget in Bulgaria – Euro 2 003 481 163.68.

**The general objective** of OPT is Development of a sustainable transport system, respectively – the railway, road and waterway infrastructures, as well as stimulation of the development of multimodal transport in conformity with the policy of the European Union and the established requirements for development of the Trans-European Transport Network towards achievement of sustainability of the Bulgarian transport system. This is in compliance with the strategic priorities of the national transport policy set in the Strategy of development of the national transport system of Republic of Bulgaria until 2015.

- Effective maintenance, modernization and development of the transport infrastructure;
- Integration of the Bulgarian transport system into the transport system of EU;
- Limiting the impact of transport on the environment and human health;
- Development of intermodal transport and Sustainable development of public transport.

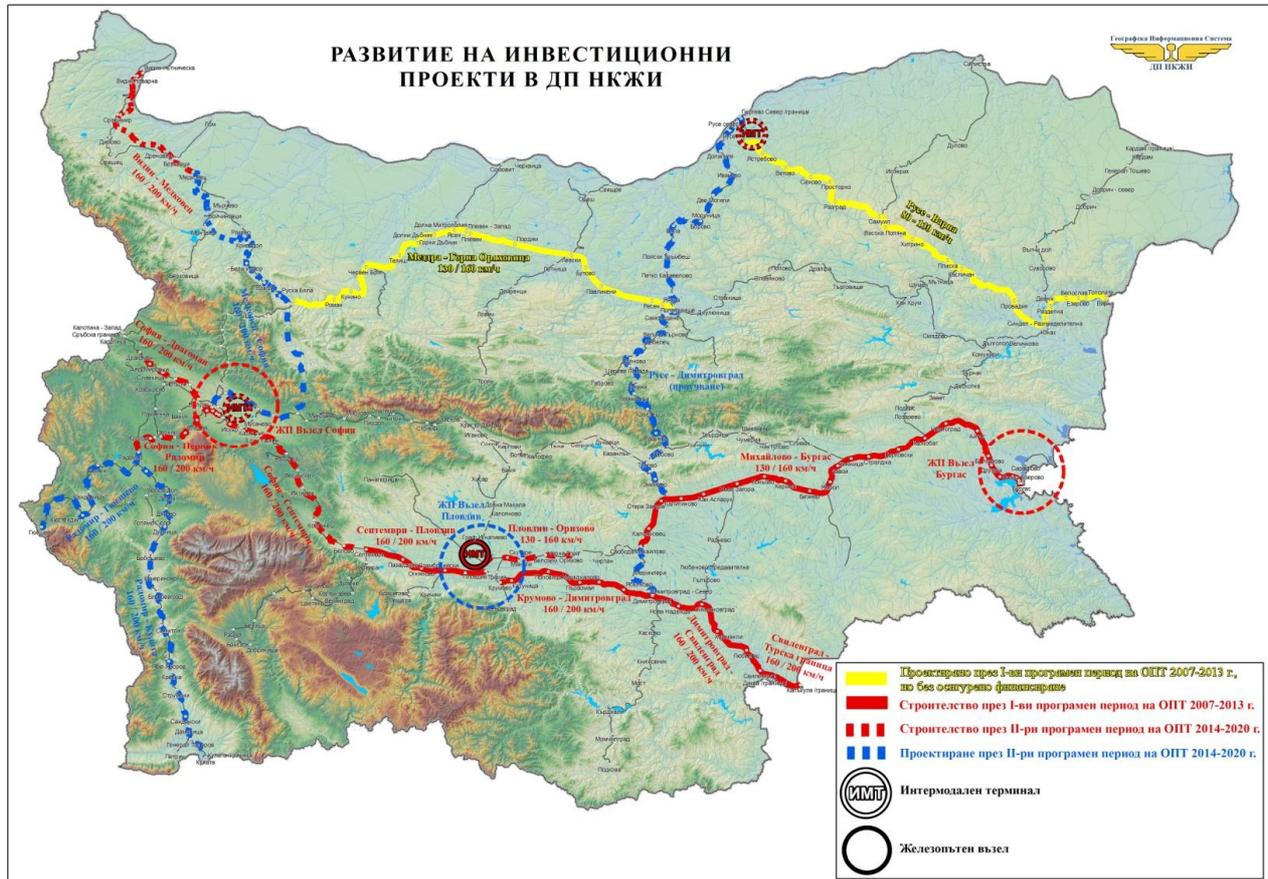
**The Specific Objective** of OPT is integration of the national transport system into the transport network of the European Union. The implementation of Priority Axis 1 of OPT „Development of the Railway Infrastructure Along the Trans-European and Major National Transport Axes” aims at construction and development of the basic railway infrastructure. Of national and European importance is the TEN-T network, priority 22 of the Trans-European transport network for improvement of the interoperability along the major railway lines with a positive effect on the environment, this being in compliance with Regulation № 1084/2006 of the Council.

### RAILWAY PROJECTS IN PROGRESS UNDER PRIORITY AXIS 1:

- BG161PO004-1.0.01-0002 „*Electrification and rehabilitation of the Svilengrad – Turkish border railway line*”
- BG161PO004-1.0.01-0003 „*Design and construction of the Vidin-Sofia railway line: railway sections Vidin-Medkovets and Medkovets –Ruska Byala*”
- BG161PO004-1.0.01-0005 „*Rehabilitation and electrification of the Plovdiv – Svilengrad railway line along corridors IV and IX, phase 2: Parvomai-Svilengrad*”
- BG161PO004-1.0.01-0007 „*Rehabilitation of the railway infrastructure in sections of the Plovdiv – Burgas railway line*”
- BG161PO004-1.0.01-0008 „*Modernization of railway section "Septemvri-Plovdiv"- part of the Trans-European railway network*”

The objective of the implementation of the project for modernization of the railway section Septemvri – Plovdiv is to increase the speed to 160 km/h, to improve the development of the basic railway infrastructure and achievement of full interoperability with the European railway network.

State Enterprise „National Railway Infrastructure Company” is a specific beneficiary under OPT.



Development of Investment Projects at NRIC SE



## Preface

This report presents the activity of the Specialized Unit for investigation of accidents and incidents in the railway transport (RAIU) carried out in conformity with Directive 2004/49/EC concerning the safety of railway transport in the Community.

The annual report contains details from the investigations conducted by RAIU in its capacity as a national investigating body and in accordance with the provisions of the Law on the Railway Transport, Ordinance № 59 of 05.12.2006 on the management of safety in railway transport, Rules for investigation of accidents and incidents in railway transport by the specialized unit in the „Aircraft, Maritime and Railway Accidents Investigation Directorate (AMRAIU)” with the Ministry of Transport, Information Technology and Communications (MTITC) and Ordinance No. H-32 of 19 September 2007 on the coordination of actions and exchange of information in the course of investigation of railway accidents and incidents.

During the year under review one investigation has been conducted of a railway accident occurred in 2011 and a new investigation was started into an accident occurred in 2012, in accordance with Art. 19, par. 2, of Directive 2004/49/EU.

The present report contains information on the safety recommendations issued as a result of the investigations thus conducted and on the steps undertaken under such recommendations.

Information is presented in the introduction to this report concerning the implementation of Operational Programme „Transport” financed from the Structural and Cohesion funds of the European Union.

## 1. INVESTIGATING BODY

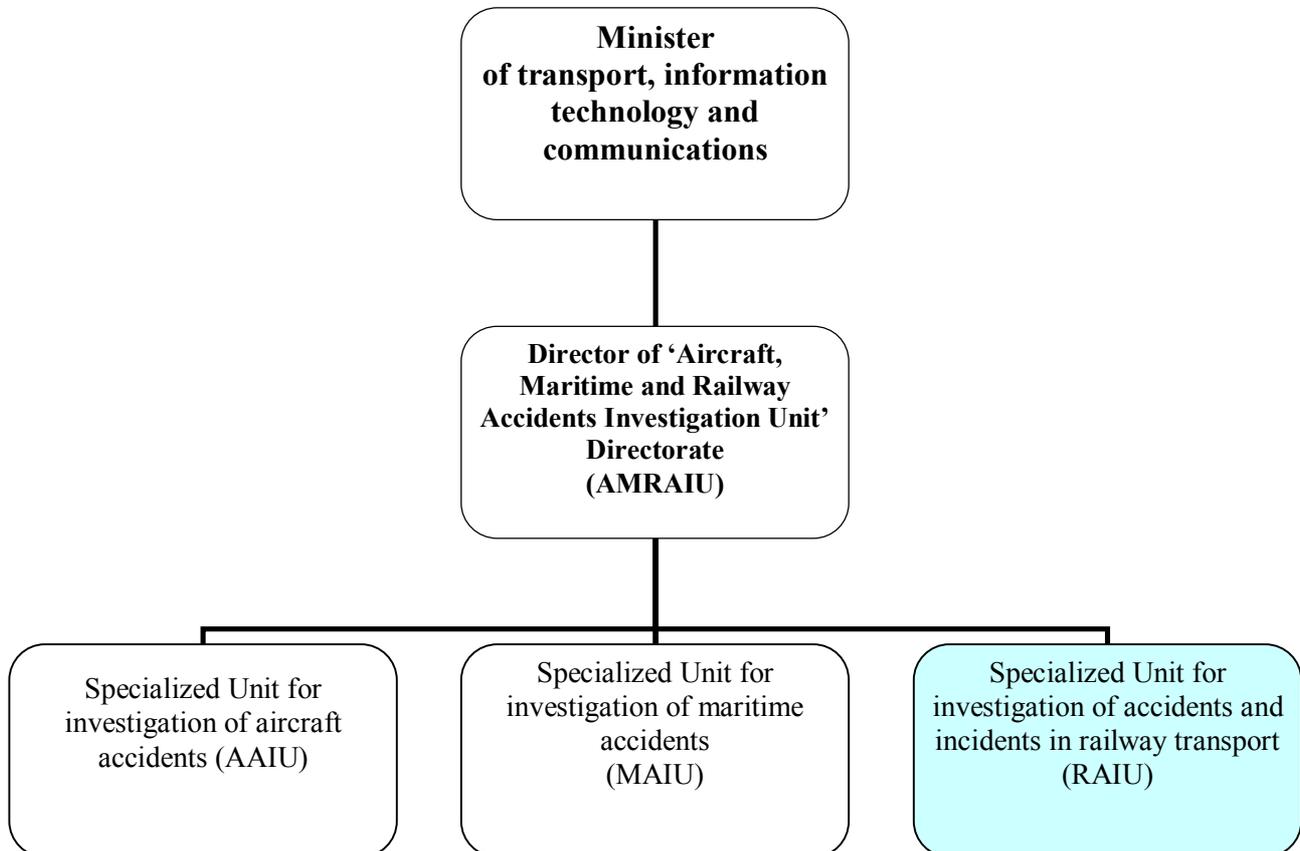
Relative to the requirements of Directive 2004/49/EC of the European Parliament and of the Council dated 29.04.2004 concerning railway transport safety in the Community transposed in the ‘Law on the railway transport’ (LRT) and Ordinance № 59/05.12.2006 on the management of safety in railway transport, by virtue of Decree of the Council of Ministers № 250 dated 25.11.2005 a Specialized Unit for investigation of accidents and incidents in the railway transport (RAIU) was created in 2006 at the Ministry of Transport, Information Technology and Communications (MTITC).

### 1.1. Legal basis

By Ministerial Council decree № 185 dated 28.07.2008 of the Republic of Bulgaria the „Aircraft, Maritime and Railway Accidents Investigation Directorate (AMRAIU)” was created within the structure of MTITC. This Directorate is a multimodal body consisting of three independent specialized units for investigation of aircraft accidents, maritime accidents and accidents and incidents in the railway transport.

RAIU is the national body for investigation of railway occurrences, it being independent of the railway infrastructure, the railway carriers and of the National Safety Authority (NSA) of the Republic of Bulgaria – ‘Railway Administration’ Executive Agency („RA” EA).

### Flowchart of UIAAMRT Directorate at the MTITC



## 1.2 Functions and Objectives

The main objective of RAIU in the conduct of investigations is the establishment of causes in case of occurred accidents and incidents, identification and issue of effective recommendations for increasing the level of safety in railway transport.

The role and activity of RAIU are determined in detail in the national statutory norms in which Directive 2004/49/EC of the European Parliament and the Council is transposed with respect to railway transport safety in the community.

The main functions and responsibilities of RAIU are, as follows:

- Organization, coordination, conduct and supervision of technical investigations into serious railway accidents and incidents occurring on the territory and within the border crossings of the Republic of Bulgaria;
- Ascertainment of all technical causes, circumstances and facts in relation with occurred serious accidents and incidents, including the identification of evidence, preparation of specialized expert reports and documentation;
- Coordination of activities for the performance of technical investigations with the competent investigating bodies of the Interior Ministry, the Prosecutor's Office of the Republic of Bulgaria and other government investigating bodies;
- Preparation and forwarding to all interested parties and publication of the final report with recommendations on safety for the avoidance of severe accidents;



- Participation in work groups for harmonization of the national regulations with the European legislation in relation to the investigation of railway accidents and incidents;
- Collection and analysis, on a daily basis, of data on occurred accidents and incidents within the railway transport system;
- Keeping of records on the investigated accidents and incidents and maintaining an information data base;
- Preparation and distribution of an information bulletin on investigated serious railway accidents and incidents.

### **1.3 Organization of the activity**

The main activity of RAIU in its capacity as a national investigating body is to investigate into railway occurrences categorized in conformity with Art. 19 and Art. 21, par. 6 of Directive 2004/49/EC. Investigation of railway occurrences is made by a RAIU team of 3 inspectors possessing the qualification of Master's degree in Engineering with legal capacity for „Control and operation of train traffic and capacity”, „Railway rolling stock” and „Computer equipment”. The budget of this Unit is planned and provided by the MTITC. Decisions on the undertaking of investigations are taken by RAIU independently, in conformity with the requirements of Directive 2004/49/EC and the applicable national legislation:

- „law on the railway transport” (LRT);
- Ordinance № 59/05.12.2006 on the management of safety in railway transport.

Each and every investigation undertaken by RAIU into a railway occurrence is notified before the European Railway Agency (ERA). A final report is worked out for each completed investigation. Reports are publicly accessible in the internet site of MTITC.

### **Involvement of RAIU in other events**

1. RAIU prepared in the months of August and October a proposal for amendment and supplement of the Law on the railway transport and a proposal for amendment and supplement of Ordinance № 59/5.12.2006 on the management of safety in railway transport in connection with discrepancies established in the transposing of Directive 2004/49/EC of the European Parliament and the Council from 29.04. 2004 concerning safety in the railway transport within the Community;

2. By way of order of the Minister for transport, information technology and Communications a committee has been appointed to perform continuous supervision over the implementation of the contract for public transport services in the field of railway transport in the territory of the Republic of Bulgaria, as concluded between MTITC and „BDZ – Passenger Transportation” EOOD for a term of 15 years effective from 01.01.2010, the Unit being member of such Committee;

3. On a monthly basis and after having received statistical information about the general indicators of safety for the previous month from the Manager of the railway infrastructure and the railway carriers in connection with the requirements of Art. 11, par. 2 of Ordinance № 59 / 5.12.2006, RAIU summarizes and performs an analysis of data on the management of safety in the railway enterprises;

4. In connection with the requirements of Art. 12, par. 1, of Ordinance № 59 / 5.12.2006 RAIU made an analysis in July 2012 of data on the management of safety in the railway enterprises from the annual reports for 2011 by the Manager of the railway infrastructure and the railway carriers;



5. RAIU monitors on a daily basis the operational situation regarding the implementation of the „Trains movement schedule” (TMS) in connection with the safety requirements;

6. Inspectors from RAIU are members of the „Board of Experts for coordination of actions and cooperation in the field of railway transport” established by an order of the Minister for transport, information technology and communications between MTITC, ‘RA’ EA and the Interior Ministry.

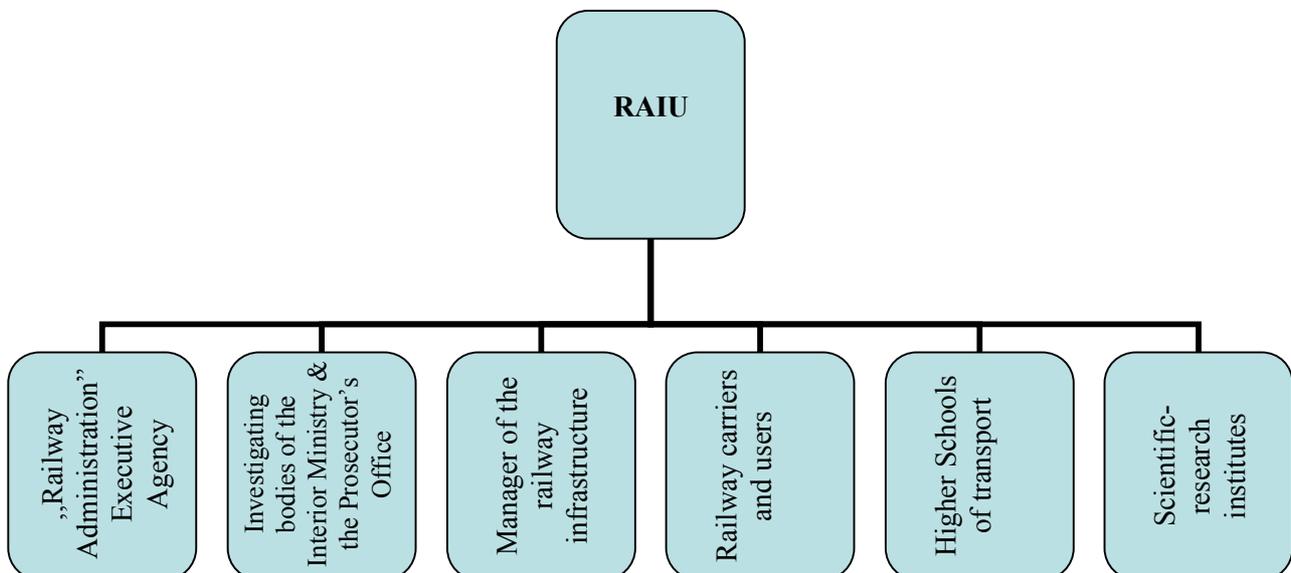
7. RAIU has prepared and published in time an annual report for the preceding year and it was forwarded also to the European Railway Agency.

#### 1.4. Organizational chart

For the purpose of creating organization and conditions for prompt and efficient work in the process of conducting a technical investigation RAIU exchanges information and coordinates its actions with the competent government investigating bodies of the Interior Ministry and the Prosecutor’s Office that perform parallel pre-trial investigation. Exchange of information takes place as acquired by one of the investigating bodies that is needed by the other one.

In the process of investigation RAIU coordinates its actions and creates work contacts with other independent institutions and specialized administrations, as well as with the Manager of the railway infrastructure, the railway carriers, users etc. for the preparation of expert reports, provision of information relative to the investigation.

#### RAIU links to other investigating bodies and institutions



## 2. PROCESS OF INVESTIGATION

### 2.1 Occurrences subject to investigation

The railway occurrences investigated by RAIU are determined in Directive 2004/49/EC, LRT and Ordinance № 59, as follows:

- Serious railway accidents;



- Accidents and incidents that, in a different situation, could have resulted in the consequences of the serious railway accidents;
- The specialized unit may, at its discretion, investigate also technical failures in the structural subsystems and components of the interoperability, while taking into account their significance.

Upon occurrence of an accident or incident the authorized officers of the Manager of the railway infrastructure and the railway carriers notify RAIU immediately in compliance with the requirements of LRT and Ordinance № 59.

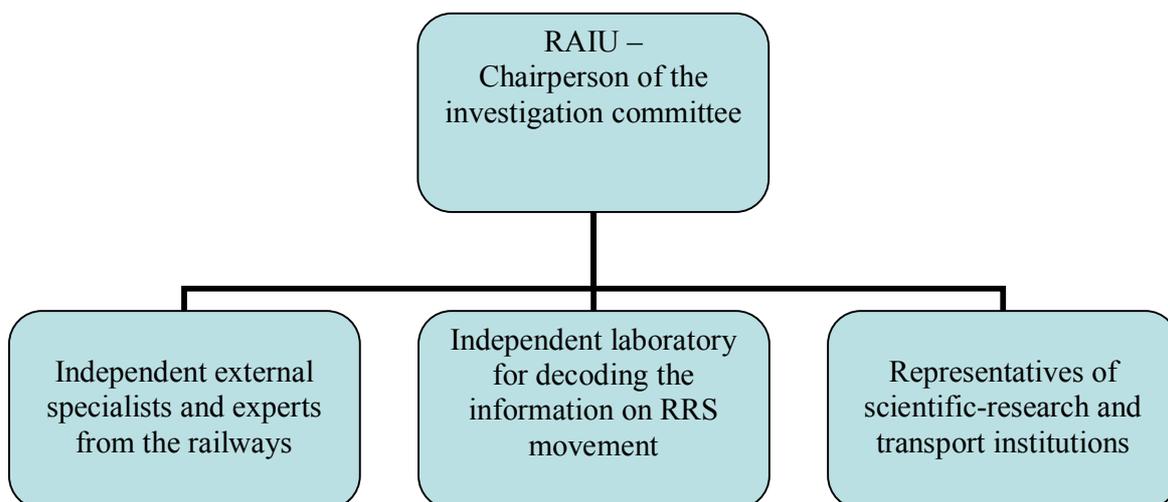
## 2.2. Institutions involved in the investigation.

In the event of investigation of an accident categorized under Art.19 of the Directive on safety members of the committee are investigation inspectors from RAIU, independent external specialists and experts from the scientific circles and transport universities.

In the course and for the purposes of investigation the Committee uses specialized services of external independent institutions:

- Scientific-Research Institute of Transport;
- Technical University - Sofia;
- „Todor Kableshkov” Higher School of Transport;
- And other institutions in each specific case.

### Structure of the Committee for investigation of railway occurrences



## 2.3. Process of investigation and Approach of the investigating body

Upon each notification on an occurred railway occurrence from the employees on duty at „NRIC” SE it is categorized by RAIU in accordance with the statutory norms. Following taking the decision for investigation RAIU immediately undertakes actions towards organization of and notification of all parties involved in the occurrence. Investigation inspectors take prompt actions to



arrive on the scene of the occurrence. Within a term of one week from beginning the investigation RAIU informs ERA about the undertaking of an investigation.

The chairperson of the Committee coordinates activities with the competent government authorities of the Interior Ministry, the Prosecutor's Office, the „Civil Defense”, the „Emergency Medical Aid”, „Fire safety and protection of the population” and other institutions in order to provide for the necessary conditions for the execution of an independent technical investigation. The Manager of Railway Infrastructure, carriers and other bodies corporate having take part in the occurrence make available to the Committee all recordings and conversations of the personnel involved in the movement of the trains and other information and documents important for the investigation. „RA” EA provides, at the request of RAIU, any important information about the accident or incident under investigation. The Committee holds meetings and questioning of the personnel involved in the accident, requests written testimony from all legal and natural persons directly or indirectly connected with the occurrence. In such activity the Committee receives the full support and help of the competent government investigating bodies of the Interior Ministry and the Prosecutor's Office that hold their own parallel investigations in accordance with the requirements of Ordinance H-32/19.09.2007 on the concordance of activities and exchange of information while investigating railway accidents and incidents. The technical investigation is conducted in a maximum open manner for the purpose of exchange of opinions and standpoints from all parties involved in the occurrence. The Committee analyses the collected documents, materials, drafted opinions and expert reports prior to, during and after the accident until the circumstances and the reasons of its occurrence are clarified.

Within one year for each completed investigation the chairperson of the committee prepares a final report on the technical investigation. Formulated in the final report are: the chronology of events, actions of the personnel, property damage, fatalities and injured persons (passengers and/or personnel), analysis of the occurrence, circumstances and causes for the happening of the occurrence and, in case of need recommendations are issued for the adoption of measures to increase the level of safety and prevention of other occurrences of similar nature. The report with recommendations is addressed to „RA” EA and to all interested parties involved in the occurrence. All addresses of recommendations are obliged in writing to inform RAIU about their introduction and implementation within the presented time limits. The final report is also forwarded to ERA and published on the site of RAIU in the Internet-portal of MTITC.

### 3. INVESTIGATIONS

#### 3.1. Overview of completed investigations, key tendencies inclusive

In 2012 RAIU completed one technical investigation into a railway accident that occurred on 20.07.2011.

**Table 1: Accidents and incidents investigated in 2012**

Type of investigated accidents and incidents	Number of accidents	Number of casualties		Damage (Euro) (approx.)
		Fatalities	Serious injuries	
Fire in RRS	1	-	-	265 590



Fire in RRS	1	-	-	21 860
TOTAL:	2	-	-	287 450

The performed technical investigations are aimed at finding out the causes for the outbreak of fire in electric locomotives and issuance of recommendations for the prevention of other accidents from safety perspective.

### 3.2. Investigations completed and started in 2012

**Table 2: Investigations completed in 2012**

Date of the occurrence	Formulation of the investigation	Legal grounds	Completed on
20.07.2011	Technical investigation into a railway accident occurred in the interstation section Lesicheri DP – Ressen on way № 1, km 271+150 – fire broken out in electric locomotive № 44-089.1, servicing fast train № 2615 in the heading Sofia-Varna.	Directive 2004/49/EC, Art. 19, par. 2 and Order by the Minister of MTITC, Art. 5, it. 6 of LRT, Art. 78, par. 1 of Ordinance № 59	06.02.2012

**Table 3: Investigations started in 2012**

Date of the occurrence	Formulation of the investigation	Legal grounds
19.12.2012	Technical investigation into a railway accident occurred in second up-and-down track in Shumen Station – fire broken out in electric locomotive № 42-081 and first wagon № 5152 2047 940-3 of passenger train № 90101 in the heading from Ruse Station – Shumen.	Directive 2004/49/EC, Art. 19, par. 2 and Order by the Minister of MTITC, Art. 5, it. 6 of LRT, Art. 78, par. 1 of Ordinance № 59

### 3.3. Examination into the safety of railway occurrences in 2012

A total of 854 railway occurrences have happened in 2012, 47 of which are accidents, including 3 head-on-crashes of RRS, 3 cases of derailment of RRS, 15 impacts at railway crossings, 21 fatalities and 39 seriously injured persons by moving RRS, with the exception of suicides and 4 fires in RRS. The value of property damage to rolling stock and railway infrastructure amounts to 305 863 EUR.

The analysis performed of investigated railway accidents shows that the main part thereof are predominantly accidents with individuals caused by RRS in motion, impacts at railway crossings with injured and killed persons, trains head-on including head-on-crashes within the limits of the structure gauge; the persons perished in suicides were 33.

#### **Railway occurrences with damage caused**

In 2008 compared against 2007 the variance damage /Levs is + 232 845 Levs (+ 119 412 EUR)

In 2009 compared against 2008 the variance damage /Levs is - 227 792 Levs (- 116 816 EUR)

In 2010 compared against 2009 the variance damage /Levs is - 226 396 Levs (- 116 100 EUR)



In 2011 compared against 2010 the variance damage /Levs is - 102 290 Levs (- 52 457 EUR)

In 2012 compared against 2011 the variance damage /Levs is + 598 206 Levs (+ 305 863 EUR)

**854 railway occurrences by type have happened in 2012, as follows:**

**Table 4: Railway occurrences during 2012**

№	TYPE OF OCCURRENCE	REGION SOFIA	REGION PLOVDIV	REGION GORNA ORYAHOVITSA	TOTAL
1	Train head-on	39	38	42	119
2	Derailment of RRS	13	13	18	44
3	Accident at railway crossing	15	10	11	36
4	Accident with persons	23	29	16	68
5	Fire in RRS	3	2	2	7
6	Failure in permanent way	18	2	7	27
7	Failure in SE	0	1	0	1
8	Missed signal at danger	2	3	1	6
9	Broken wheel of RRSC	0	0	0	0
10	Failure in RRS at RI that caused a delay	4	5	9	18
11	Failure in permanent way	52	52	60	164
12	Failure in SE	26	6	18	50
13	Failure in the catenary	31	32	45	108
14	Incorrect or non-coordinated actions of OP of RI	5	12	5	22
15	Missed train	0	0	0	0
16	Train received at occupied track	0	0	0	0
17	Train dispatched without approval	0	0	1	1
18	Train dispatched to an occupied interstation section	0	0	0	0
19	Train non-provided with brake mass	0	0	0	0
20	Non-lowered manually operated barriers for a train	1	2	1	4
21	Movement on a non-set route	5	13	5	23
22	Failure in RRS at RI resulting in derailment	0	0	0	0
23	Self rolling RRS	0	1	0	1
24	RRS left outside the distance indicator	0	0	0	0
25	Traffic disturbance	55	56	44	155
	<b>TOTAL :</b>	<b>292</b>	<b>277</b>	<b>285</b>	<b>854</b>

**Diagram of railway occurrences on the railway network in 2012**

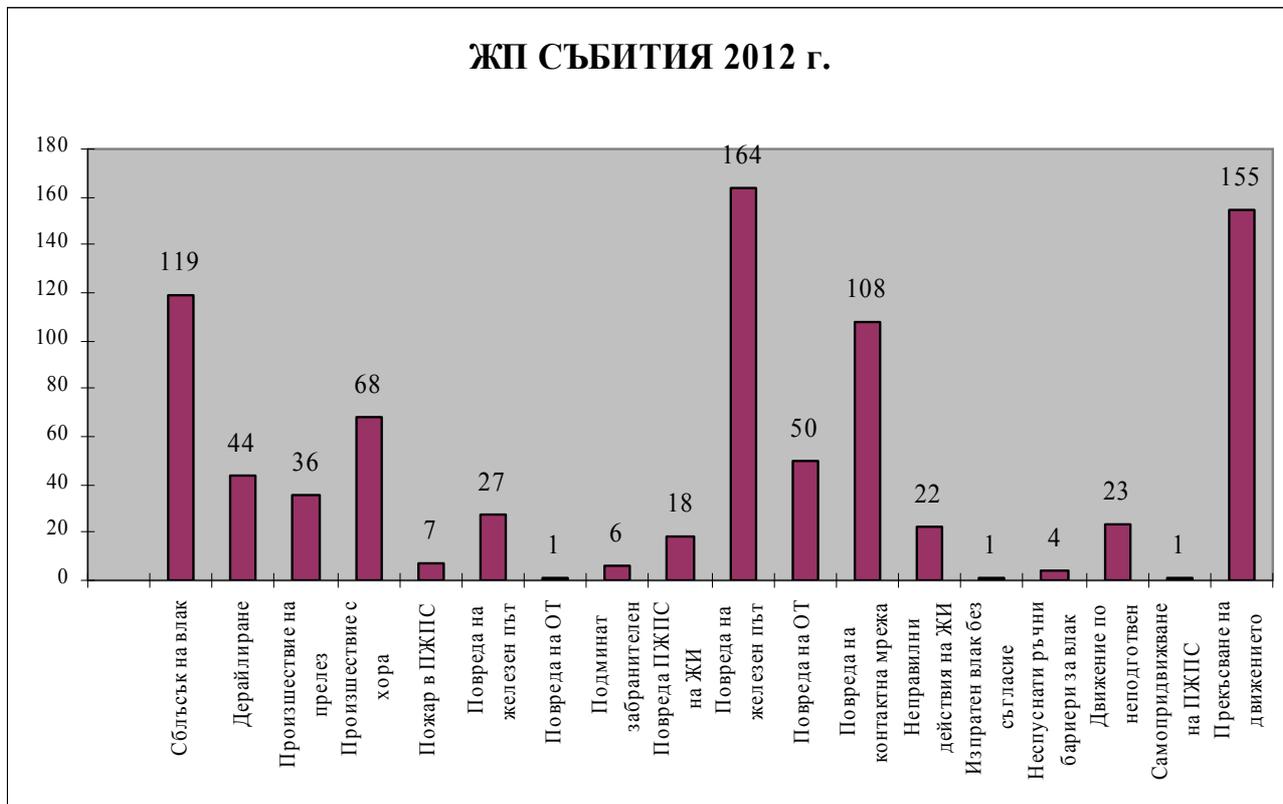
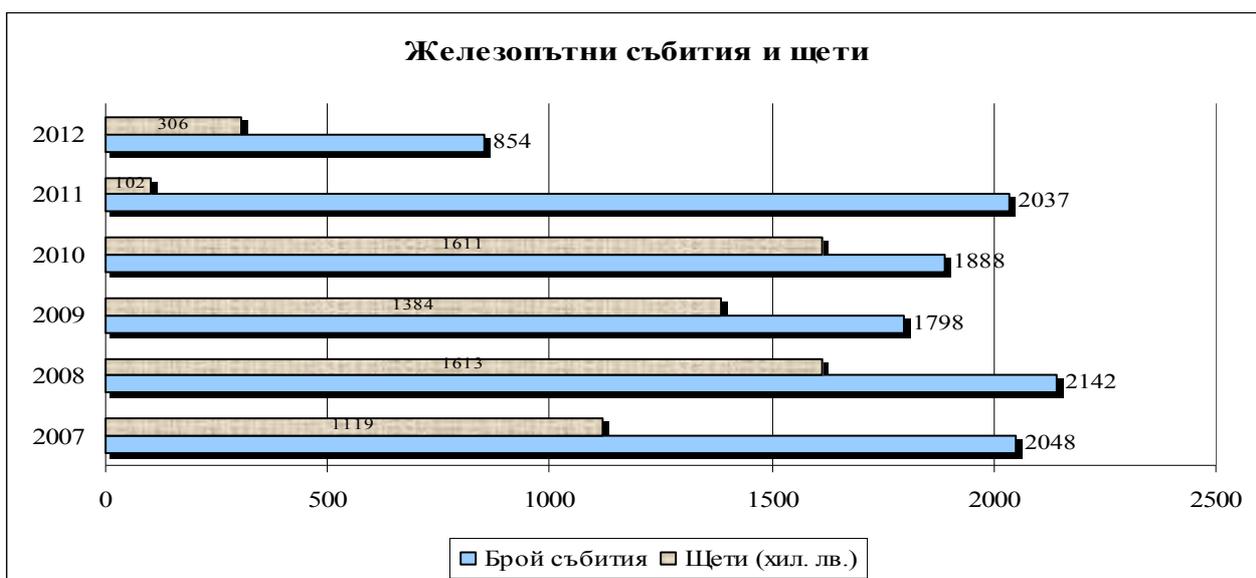


Chart of railway occurrences and damage caused on the railway network for the period 2007 - 2012



Railway occurrences and damage

- No. of occurrences - Damage (thou. Levs)



### 3.4. Summary of completed investigations in 2012

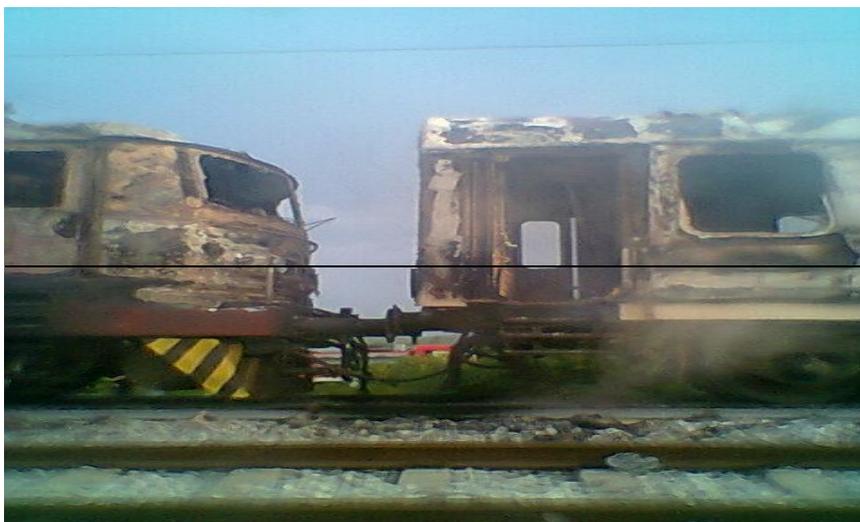
There is one technical investigation completed in 2012. A final report on the investigation was made out and one recommendation has been issued that includes 8 measures for reducing the risk of outbreak of fires in the systems of electric locomotives and aimed at increasing safety.

Subject matter of the investigation were the circumstances and causes behind the outbreak of fire in electric locomotive № 44-089.1 of fast train № 2615 composed of 5 passenger wagons, 213 tons, moving in the direction of Sofia-Varna on 20.07.2011, operated by „BDZ-Passenger Transportation” EOOD. During the train movement and during the stays at stations the locomotive team had made external and internal visual inspection of the locomotive with no visible malfunction observed thereon. The locomotive had undergone all the necessary repair activities in accordance with the applicable regulations for planned maintenance and repair of electric locomotives of the 44 series. In the course of train movement all speed limits for the sections have been observed until the accident did occur.

At 17:20 hrs at a speed of 118 km/h the locomotive team noticed smoke and flames in the middle section of the locomotive from under the body. Emergency train stop was undertaken. The locomotive team started extinguishing the flames coming from the horizontal fans, with the available fire extinguishers of the locomotive. Safe evacuation was organized of passengers from the wagons. Despite the use also of the powder fire-extinguishing installation the fire grew quickly and spread to the engine room of the locomotive and, due to the wind blowing at speeds of 3-4 m/s and the 31,8°C temperature of the air, the fire engulfed the first and the second wagons of the train destroying them completely.

The fire was extinguished by the Fire Safety and Protection of the Population brigade by 19:30 hrs. Clearing off and restoring the capacity of the railway infrastructure continued from 19:30 hrs until 23:20 hrs. As a result of the fire the electric locomotive and the first two passenger wagons of the train were destroyed completely.

*Locomotive and wagons from train № 2615 destroyed by fire*





Due to the high temperature developed by the fire and the strong wind in the direction from current permanent way 1 to current permanent way 2 the contact network of current permanent way 2 melt down and in the zone of the burned wagons and the electric locomotive the components of the superstructure of current permanent way 1 and permanent way 2 were damaged. Following the executed repair work train traffic was restored on permanent way 1 and 2 at a speed of 25 km/h.

Consequences:

- There were no fatalities or injured persons;
- Damage caused to the locomotive and 2 passenger wagons, as well as to the railway infrastructure;
- Disturbed traffic – cancelled 16 trains and delayed 32 trains;
- Losses from this accident amount to 560 712 Levs (286 688 Euro).

Causes:

The Committee for the technical investigation has arrived at the following findings:

- The technical condition of electric locomotive № 44-089.1 during its movement along permanent way 1 prior to the outbreak of the fire was good and all units and components were operating within the allowable operating parameters;
- The most probable cause of the fire is the intensive sparking of the collector in the electric motor that initiated the ignition of accumulated grease-dust layer on the electric motor located on the left side in the direction of movement of the locomotive or is a consequence of a rupture in a capacitor of the „R-C” groups for protection of the auxiliary rectifiers 221 by internal switching overvoltages, which is confirmed by the analysis and conclusions of the fire-technical expert report and the technical opinion of the independent expert.

Status of the investigation:

The investigation completed on 06.02.2012 and a final report was prepared and published with safety recommendations.

### **3.5. Comments on investigations started but not completed in 2012**

The object of an investigation started in 2012 into the circumstances and caused behind the outbreak of a fire in locomotive № 42-081.0 of passenger train № 90101, occurred upon its arrival at Shumen Station on 19.12.2012. The train was operated by „BDZ-Passenger Transportation” EOOD. The locomotive team noticed emission of smoke from low below the rear section of the



locomotive, and immediately thereafter – dense smoke from the rear driver's cab and flames from the intermediate corridor on the side of the engineer. Fire extinguishing was undertaken with the fire extinguishers available in the locomotive, yet the fire grew quickly and at 11:40 assistance was called from the „Fire Safety and Protection of the Population” service – city of Shumen. The fire was extinguished by 12:50 hours and the emergency-repair activities started. Train movement on the second track in this station was resumed at 19:06 hours.

Consequences:

- There were no fatalities or injured persons;
- Completely destroyed by fire is the first control cab of the locomotive, including wires of the operating and power circuits that control and supply power to the auxiliary assemblies from the cab, apparatus cabinets and damage to the units located at the beginning of the passage corridor in the engine room;
- burned 2 vertical and 1 horizontal bellows of the passenger wagon;
- burned-out wire of the collection network;
- interrupted catenary system and delays caused to 9 trains;
- losses caused to the amount of 42 754 Levs (21 860 Euro).





Causes:

The immediate technical cause for the occurred accident – outbreak of fire in electric locomotive № 42081.0 on track number two at Shumen Station was: occurred primary electrical short-circuit in the operating wires connected to control switch 370 installed in the middle column of the control panel in the first driver’s cab of the electric locomotive. The investigation was completed on 17.05.2013 and forwarded to ERA.

**3.6. Accidents and incidents during the last five years 2008 – 2012**

**Table 5: Accidents and incidents investigated during the period 2008 – 2012**

Investigated		2008	2009	2010	2011	2012	TOTAL
Serious accidents (Art.19, 1 & 2, of Directive 2004/49/EC)	Trains head-on	-	-	1	-	-	<b>1</b>
	Head-on crash	-	-	-	-	-	<b>0</b>
	Train derailment	-	-	1	-	-	<b>1</b>
	Accident at a railway crossing	-	-	2	-	-	<b>2</b>
	Accident with a person caused by moving rolling stock	-	-	-	-	-	<b>0</b>
	Fire in Rolling stock	1	1	1	1	1	<b>5</b>
	Accident related to dangerous freight	-	-	-	-	-	<b>0</b>
Other under Art. 21.6	none	-	-	-	-	-	<b>0</b>
Incidents		-	-	1	-	-	<b>1</b>
<b>Total:</b>		<b>1</b>	<b>1</b>	<b>6</b>	<b>1</b>	<b>1</b>	<b>10</b>

**Diagram of the accidents and incidents investigated during the period 2008 – 2012**





## 4. RECOMMENDATIONS

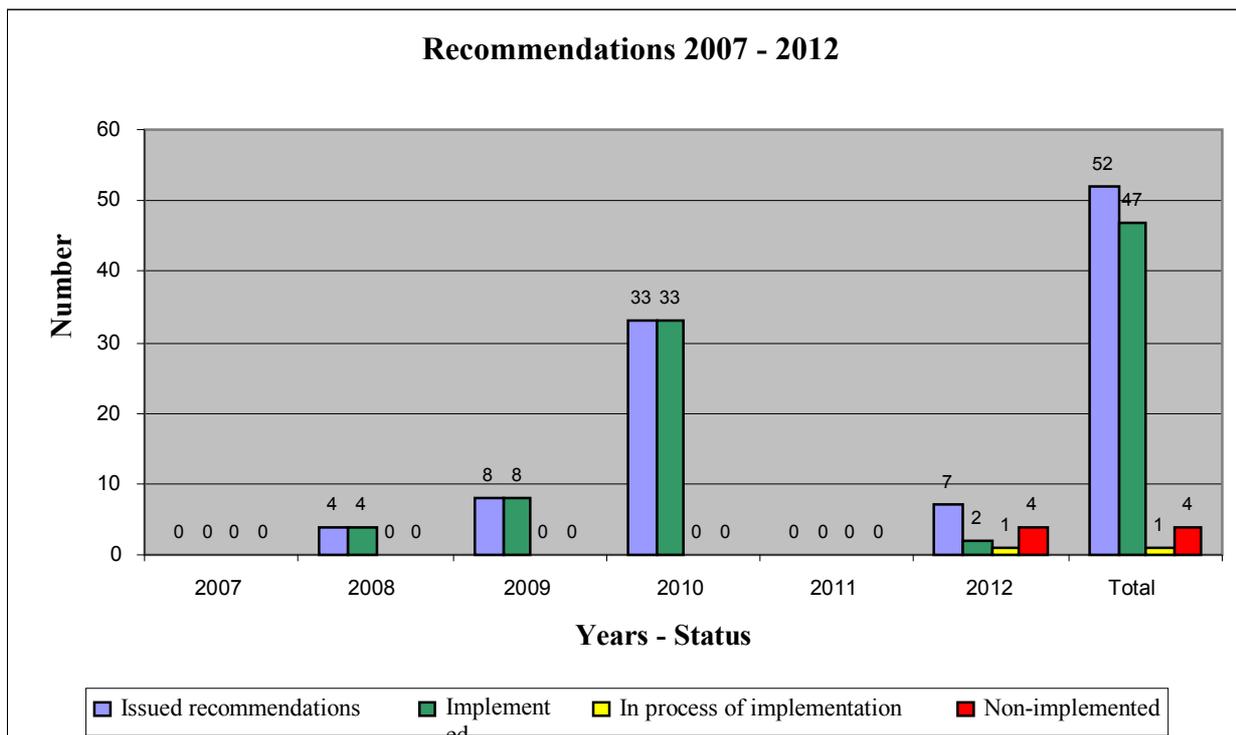
### 4.1. Brief overview and presentation of the recommendation

All recommendations issued by RAIU are aimed at preventing and improving the safety and avoidance of serious railway accidents.

**Table 6: Implementation of recommendations during the period 2007 – 2012**

Issued recommendations		Implementation status of the recommendations		
		Implemented	In the process of implementation	Not implemented
Year	no	no	no	no
2007	0	0	0	0
2008	4	4	0	0
2009	8	8	0	0
2010	33	33	0	0
2011	0	0	0	0
2012	7	2	1	4
<b>TOTAL</b>	<b>52</b>	<b>47</b>	<b>1</b>	<b>4</b>

**Diagram of recommendations issued by RAIU during the period 2007 – 2011**





#### 4.2. Safety recommendations for 2012

The safety recommendations given in the final report of an investigated accident in the interstation section DP Lesicheri – Ressen perm. way № 1 on 20.07.2011, are as follows:

The managers of „BDZ-Passenger Transportation” EOOD shall instruct the responsible services to undertake the relevant measures:

1. Replacement of the fire-extinguishing installation with a more efficient one enabling the extinguishing of fires broken out in the rectifier cabinet or in other inaccessible places in the electric locomotive.

2. Replacement of the extinguishing agent used thus far with a new modern one enabling a more successful fire extinguishing.

3. The possibility shall be studied of installing additional devices (pyro-extinguisher cartridges) that ensure a timely and reliable extinguishing of any fire outbreak.

4. The old condensers shall be replaced by new ones with a new type of dry condensers in the rectifier block of electric locomotives during subsequent planned repairs.

4. Improvement of the fire-alarm installation of electric locomotives of the same series.

5. Organization of extra briefing on fire safety for the response of locomotive teams in case of outbreak of fires in the traction rolling stock, such teams being made familiar with the specificities of each individual case.

6. The possibility shall be studied for implementing thermographic cameras for diagnostics of the thermal processes in devices and equipment for low, medium and high voltage in locomotives upon their arrival for repair.

**Boycho Skrobanski**

*State Inspector at AMRAIU*

**Atanas Kostov**

*Director of AMRAIU Directorate*

I, the undersigned Hristo Dimitrov Lambrinov hereby certify that this is a true and accurate translation done by me from Bulgarian into the English language of the attached document  
This translation comprises 20 pages.

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