

Translation from Bulgarian



REPUBLIC OF BULGARIA

**MINISTRY OF TRANSPORT, INFORMATION TECHNOLOGY
AND COMMUNICATIONS**

**AIRCRAFT, MARITIME AND RAILWAY ACCIDENT
INVESTIGATION UNIT DIRECTORATE**

**SPECIALIZED UNIT FOR RAILWAY ACCIDENT AND INCIDENT
INVESTIGATION**

ANNUAL REPORT



Year 2011



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Specialized Unit for Railway Accident and Incident Investigation in the Republic of Bulgaria

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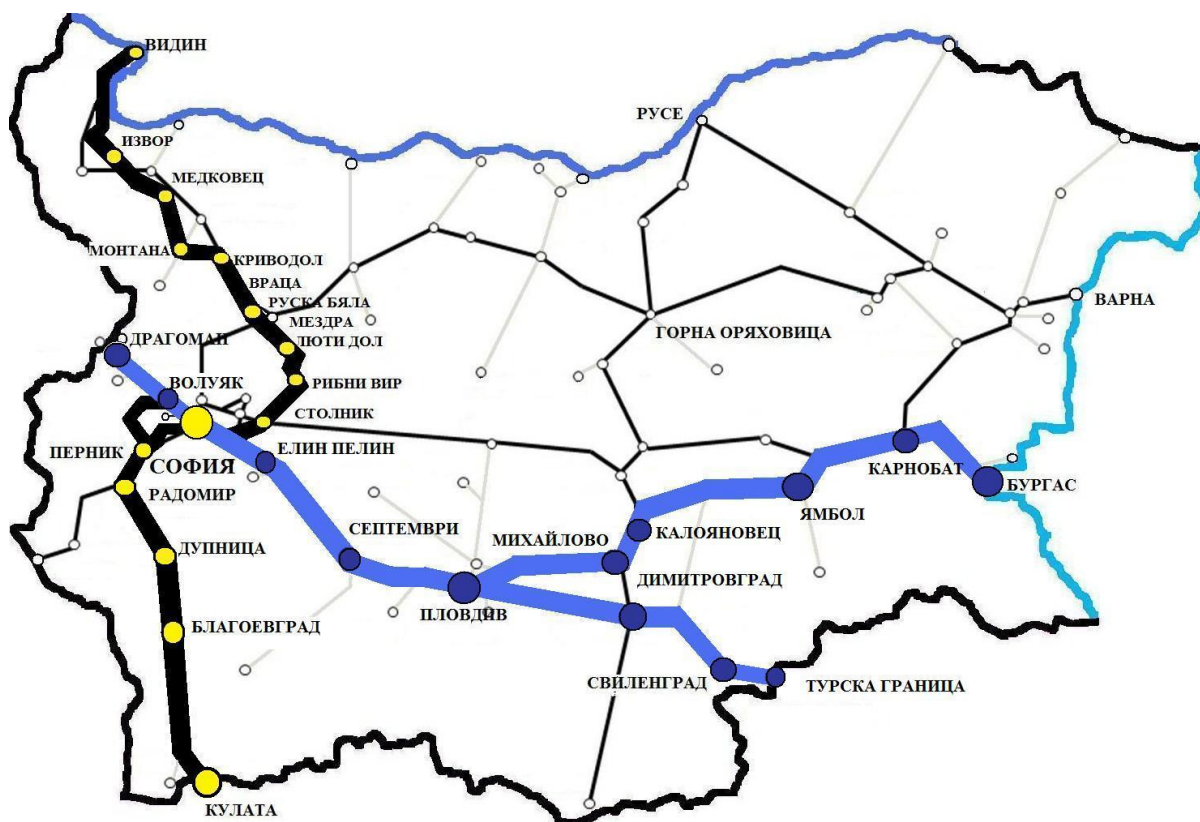
Introduction

The first programming period of **Operational Programme "Transport" (OPT) 2007-2013** of the Republic of Bulgaria is financed by a loan from the EIB and a grant under ISPA Programme. According to Addendum 5 of 16 December 2011 to Financial Memorandum CCI 2001 BG 16 P PT 003, the overall project cost is EUR 160 million.

The goal of OPT is to develop the railway infrastructure and to stimulate the development of transport intermodality in accordance with the EU transport policy and the established requirements for the development of the Trans-European Transport Network to achieve sustainability of the Bulgarian transport system.

The Operational Programme is focused on several strategic priorities and is a continuation of the construction of European Corridors IV and X which will contribute to the integration of the national railway network of the Republic of Bulgaria with that of the Trans-European Rail Network.

PROJECT: PLOVDIV – SVILENGRAD – TURKISH/GREEK BORDER RAILWAY LINE RECONSTRUCTION AND ELECTRIFICATION AND OPTIMIZATION OF THE TRACK FOR 160 KM/H SPEED, CONTINUATION OF CORRIDORS IV, VIII AND X



1. INVESTIGATING BODY

In compliance with the requirements of Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways, transposed into the Railway Transport Act (RTA) and Ordinance 59 of 5 December 2006 on management of railway safety, under Council of Ministers Decree 250 of 25 November 2005, the Specialized Unit for



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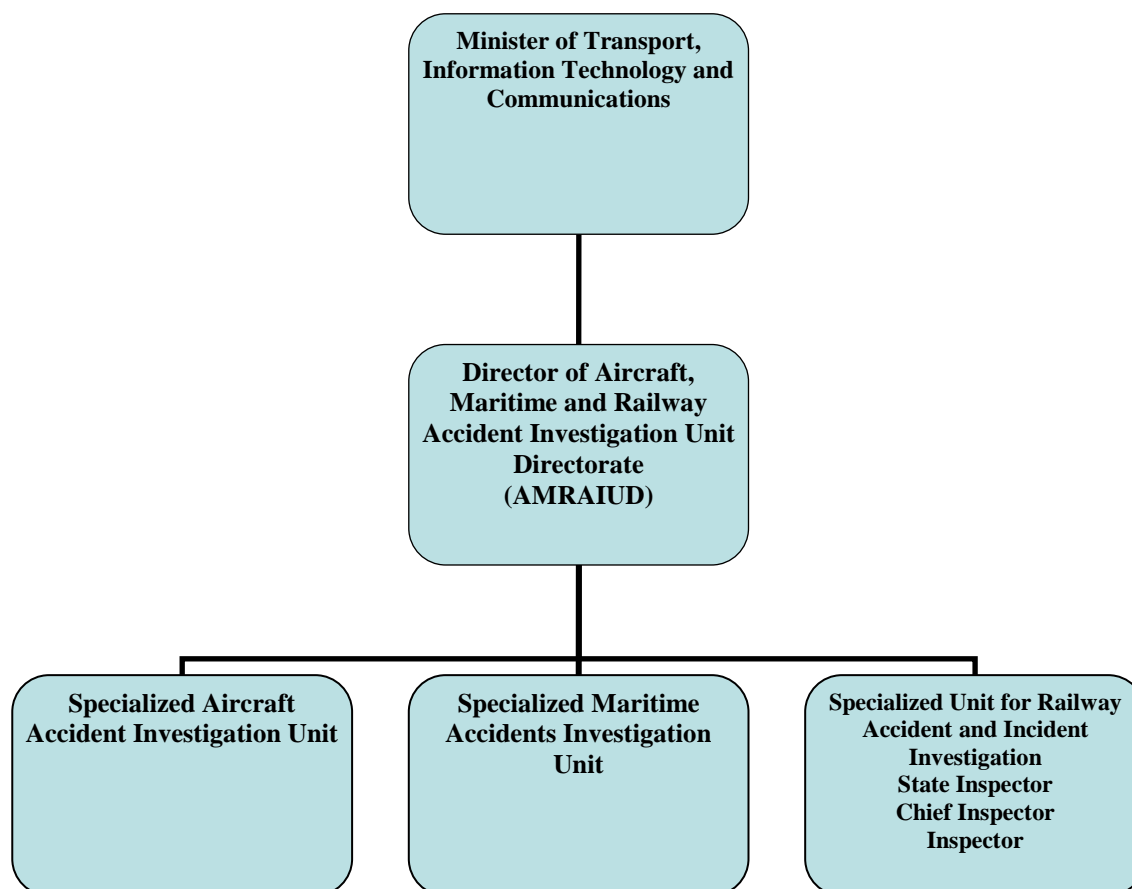
Railway Accident and Incident Investigation (SURAI) was set up at the Ministry of Transport, Information Technology and Communications (MTITC).

1.1 Legal Basis

Under Council of Ministers Decree 185 of 28 July 2008 of the Republic of Bulgaria, the Aircraft, Maritime and Railway Accident Investigation Unit Directorate (AMRAIUD) was set up in the structure of MTITC. The Directorate is a multimodal authority and subordinate directly to the Minister of Transport, Information Technology and Communications. The Directorate consists of three specialized units in the field of investigation of aircraft occurrences, maritime accidents and railway transport incidents.

SURAI is an independent body to investigate railway occurrences by both the Manager of the railway infrastructure and railway carriers and the Railway Administration Executive Agency (RAEA) – the National Safety Authority (NSA) in the Republic of Bulgaria.

Organogram of AMRAIU Directorate at MTITC



1.2 Functions and Goals

The functions of the inspectors to investigate railway accidents and incidents are described in the national regulations which transpose Directive 2004/49/EC of the European Parliament and of the Council on safety on the Community's railways.



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Key functions of the inspectors in investigating railway accidents and incidents:

1. To organize, coordinate and supervise the technical investigation of serious railway accidents and incidents occurred on the territory and at the border checkpoints of the Republic of Bulgaria.
2. To establish the circumstances and reasons for the occurrence of serious railway accidents in order to prevent other similar accidents and to improve railway safety.
3. The Chairman of the Investigation Commission coordinates the operations in carrying out investigations together with the Ministry of Interior, Courts, Prosecutors and other government investigators.
4. To participate in working groups to harmonize the national regulations on investigation of railway accidents and incidents.
5. To daily collect and analyze data on accidents and incidents occurred in the system of railway transport.
6. To keep records of accidents and incidents investigated and to maintain a database.
7. To prepare and distribute information bulletins covering accidents and incidents investigated.
8. After each completed investigation on railway incident, the Head of the Unit prepares a final report with safety recommendations to prevent future accidents.

1.3 Organization of Operation

The main operation of SURAI is to investigate railway occurrences categorized under Art. 19 and Art.21, para. 6 of Directive 2004/49/EC. The investigation of railway occurrences is carried out by the inspectors at SURAI, who are qualified Masters in Engineering, specialized in Train Movement and Capacity Management, Railway Infrastructure Operation and Maintenance and Railway Rolling Stock. The budget of the Directorate is planned and provided by MTITC. The decisions to undertake investigations are made in accordance with the requirements of Directive 2004/49/EC and the national rules:

- Railway Transport Act (RTA);
- Ordinance 59 of 5 December 2006 on management of railway safety.

All investigations of railway occurrences undertaken by AMRAIUD are notified to the European Railway Agency (ERA). For each investigation a final report is drawn up which is to be approved by the Minister of Transport, Information technology and Communications. These reports are publicly available on the website of MTITC. The Director of the Directorate submits to the Minister annual reports on the recommendations and the measures undertaken by the addressees.

Participation of AMRAIUD in other events

1. An Order of the Minister of Transport, Information Technology and Communications in April 2011 appointed a commission to assess the risk at MTITC and a group was set up to coordinate and organize the process of risk assessment with the participation of an inspector of SURAI.
2. In June 2011, the National Technical Union of Transport conducted in Sofia a workshop on the condition and development of projects financed under Operational Programme "Transport", presented by the National Railway Infrastructure Company (NRIC). The workshop was attended by an inspector of the Unit.



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3. At the request of ERA, in June 2011 SURAII prepared a register of railway accidents and incidents occurred in the period 1980 to 1989. The register was submitted to the Agency.

4. In November 2011 SURAII completed a questionnaire received through the EU Pilot system of the European Commission relating to some inconsistencies in the transposition of Directive 2004/49/EC of the European Parliament and of the Council of 29 April 2004 on safety on the Community's railways.

5. An Order of the Minister of Transport, Information Technology and Communications, set up a commission to continuously monitor the execution of the public transport service contract in the field of railway transport in the Republic of Bulgaria entered into by and between MTITC and BDZ - Passenger Services Ltd. for a period of 15 years with effect from 1 January 2010, in which the Unit participated.

6. In June 2011 Balkans Intermodal International Conference "Railway Transport Logistics on the Balkans 2011" was held in Sofia, which was attended by an inspector of the Unit.

7. SURAII daily monitors the operating environment for the implementation of the Train Movement Schedule (TMS) in connection with the requirements of the safety rules.

8. After receiving statistical information on the general safety indicators for the previous month prepared by the safety structures subordinate to the manager of the railway infrastructure and the railway carriers in connection with the requirements of Art. 11, para. 2 of Ordinance 59 of 5 December 2006, SURAII monthly analyzes the safety management system within the railway companies and undertakings.

9. In June 2011, after receiving the annual reports of the safety structures subordinate to the manager of the railway infrastructure and the railway carriers in connection with the requirements of Art. 12, para. 1 of Ordinance 59 of 5 December 2006, SURAII conducted an analysis of the safety management system within the railway companies and undertakings.

10. In respect to the need for training and qualification of the employees of NRIC, in September 2011 an inspector of SURAII participated in a theoretical training and passed a theoretical and practical examination on the national safety rules in railway transport.

11. Coordination by the Directorate of SURAII on the Notification rules and procedures for appointing an operational group of NRIC to preserve, register and save physical evidence upon occurrence of railway accidents and incidents in connection with the requirements of Art. 69, para. 2 of Ordinance 59.

12. An Order of the Minister of Transport, Information Technology and Communications set up the Expert Council for Coordination of Actions and Cooperation in Railway Transport, uniting representatives of MTITC, RAEA and the Ministry of Interior and including inspectors of the Unit, which continues its operation in 2011 as well.

13. In connection with the execution of Report 14-00-2798 of 27 October 2011 by the Minister of Transport, Information technology and Communications, an interdepartmental working group was set up, that analyzes the fire hazards in traction and non-traction rolling stock and identifies measures in order to limit the possibility of occurrence of fires. Two workshops held on 2 November and 17 November 2011 in the Ministry of Transport, Information Technology and Communications were attended by representatives of Fire Safety and Protection of Population Service (FSPP) at Holding Bulgarian State Railways EAD, structures and management executives on railway safety at NRIC and rail carriers operating traction and non-traction rolling stock. The Working Group analyzed the fire hazard situation in Traction Rolling Stock (TRS) at Holding Bulgarian State Railways EAD and the other railway carriers. The Working Group discussed and agreed on safety measures that are adequate and effective under the current conditions. The



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measures provide for a better level of safety and control of passenger and freight transport and reduce the level of fire hazard.

By 31 May 2012 the management executives and heads of railway companies and undertakings – carriers should inform in writing the Aircraft, Maritime and Railway Accident Investigation Unit Directorate on the actions and measures in place to ensure safety.

14. SURAII prepared proposals to amend and supplement the Railway Transport Act, which were accepted and implemented by the Legal Directorate at MTITC.

15. SURAII prepared and published on time an annual report on the investigations and the other actions carried out within the preceding year, the latter was submitted to the ERA.

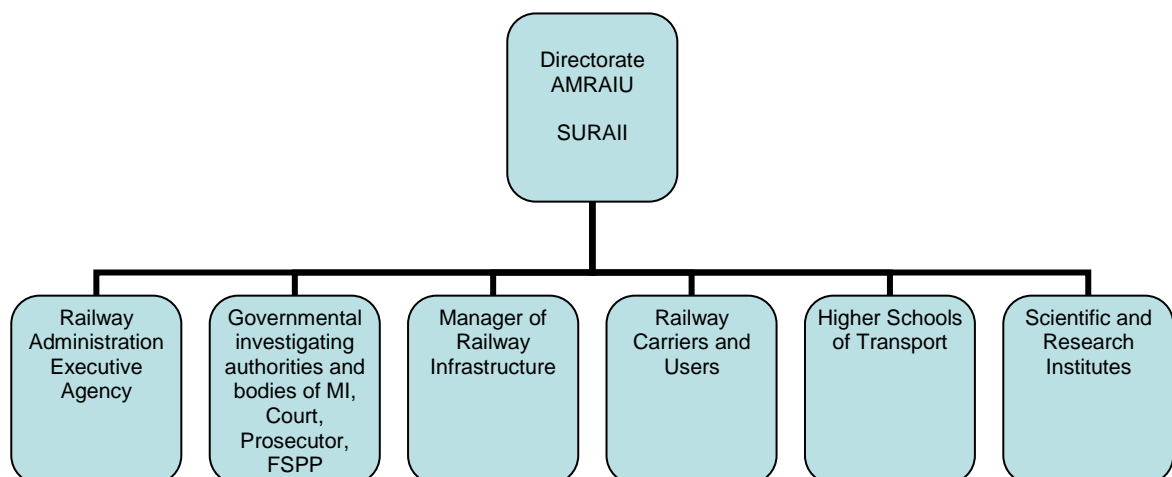
16. SURAII prepared Rules for Investigation of Railway Accidents and Incidents, approved by the Minister of MTITC.

1.4 Organizational Chart

A pre-trial investigation is carried out in parallel to the technical investigation in progress by the competent investigating bodies of the Ministry of Interior, the Court and the Prosecutors.

In the course of the investigation, SURAII coordinates its actions with other independent institutions and specialized administrations, as well as with the manager of railway infrastructure, railway carriers, users, etc.

Relation of SURAII with other investigating bodies and institutions





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2. INVESTIGATION PROCEDURE

2.1 Incidents under Investigation by Categories

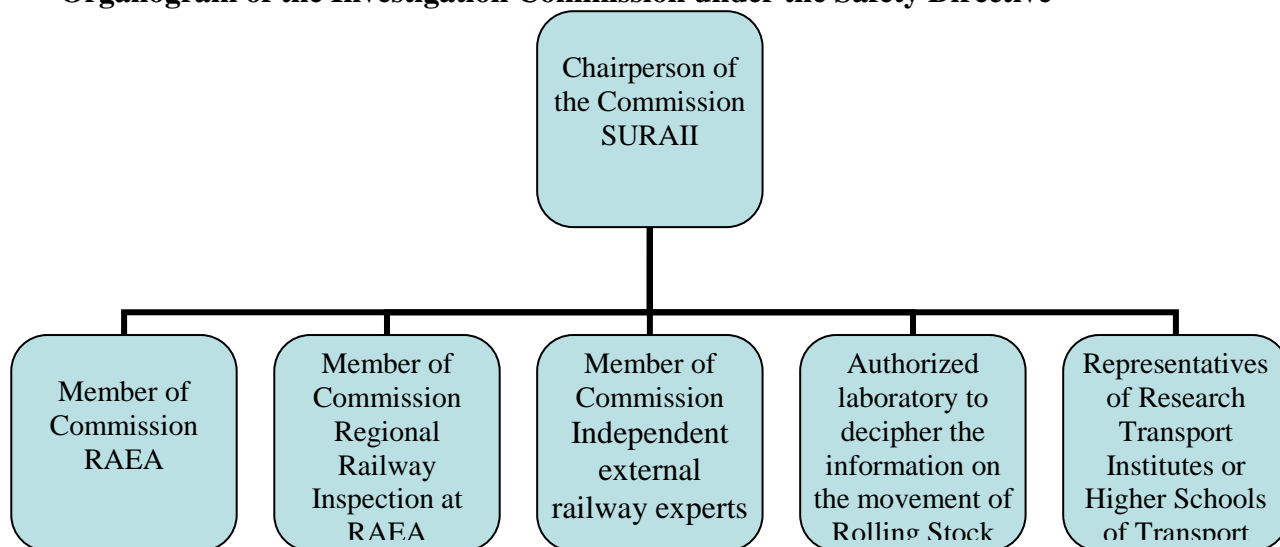
This year SURAII has carried out an investigation of a railway occurrence categorized as an accident under Art. 19, para. 2 of the Safety Directive.

2.2 Institutions Involved in the Investigation.

1. The Commission investigating the accident categorized under Art. 19, para. 2 of the Safety Directive consisted of representatives of:

- Railway Administration Executive Agency;
- Independent external railway experts;
- Scientific and Research Transport Institute;
- Technical University;
- Higher School of Transport.

Organogram of the Investigation Commission under the Safety Directive



2.3 Investigation Procedure and Investigating Body Approach

In case of notifications on railway occurrences sent to SURAII by the NRIC staff on duty, the latter should also be categorized pursuant to the national safety rules by SURAII. When SURAII categorizes an occurrence eligible for investigation, actions are immediately undertaken to organize the investigation and notify all involved parties and the National Safety Authority. The inspectors immediately take action to move to the location of the occurrence. An instrument of the railway infrastructure manager under Ordinance 59 of 5 December 2006 appoints an operational group which immediately sets off to the accident location. The obligation of the operational group is to collect all books, logs, samples, records and other important facts and circumstances related to the incident. The head of the operational group prepares a report within five days of the occurrence of the incident under Ordinance 59 of 5 December 2006 to the authorized to Chairperson of the



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Commission. Within one week of the initiation of the investigation the Unit informs ERA. The Minister of Transport, Information Technology and Communications issues an order for the appointment of a Technical Investigation Commission according to the category of the incident.

The Chairman of the Commission coordinates the operation of the Technical Investigation Commission together with the competent state authorities, the Ministry of Interior, Court, Prosecutors, Civil Protection Service, Emergency Medical Services, Fire Safety and Protection of Population Service and other institutions. The manager of the railway infrastructure, the railway carriers and others legal entities involved submit to the Commission all records and interviews of the staff involved in the management of train movement and other information and documents important for the investigation. The Commission conducts meetings and interviews with the staff involved in the accident, requires written statements of all legal entities and individuals directly and indirectly involved with the occurrence. In doing so, the Commission receives full support and assistance from the competent government investigating bodies at the Ministry of Interior, Court and Prosecutors, which conduct a joint investigation under the provision of Ordinance H – 32 of 19 September 2007 on coordination of activities and exchange of information in investigations of railway accidents and incidents. The technical investigation is carried out in a maximum open manner aiming at exchanging views and considering the opinions of all parties involved in the accident. The Commission analyzes the collected documents, materials, expert opinions and hypotheses prepared before, during and after the accident in order to clarify the circumstances and causes of its occurrence. The Commission completes its work at the accident location as quickly as possible so that the railway infrastructure manager will be able to restore the railway traffic. Within one year after the completion of each investigation the Chairman of the Technical Investigation Commission prepares a final report. The final report formulates the chronology of events, the actions of the staff, property damage, number of killed and injured (passengers and/or staff), analysis of the incident, the circumstances and the causes of the occurrence and, if necessary, produces safety recommendations to prevent the occurrence of other incidents of a similar nature. The recommendations are addressed to all parties involved and the National Safety Authority. The addressees of the recommendations are required to inform in writing SURAI on their enforcement. The approved final report is publicly available on the website of MTITC. A copy of the report is sent to ERA.

3. INVESTIGATIONS

3.1 Synopsis of Completed Investigations, including Key Trends

Table of accidents and incidents investigated in 2011

Type of accidents and incidents investigated	Number of accidents	Number of deaths	Serious injuries	Damages in EUR (approximately)	Compared to previous years in EUR
Fire in the Rolling Stock	1	-	-	265,590 EUR	2008/2009/2010 181,223
TOTAL:	1	-	-	265,590 EUR	181,223 EUR

3.2 Investigations Completed and Initiated in 2011

No investigations were completed in 2011.



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Table of investigation initiated in 2011

Date of occurrence	Investigation Overview	Legal Grounds
20 July 2011	Technical investigation of a railway accident occurred at 5:20 pm on 20/7/2011 in the interstation section DP (Dividing Point) Lesicheri - Resen on Route 1 at km 271+150 - fire in the electrical locomotive No.44-089.1 servicing fast train No.2615 between Sofia - Varna.	Order of the Minister of MTITC pursuant to Art.5, it. 6of the RTA, Art. 78, it.1 of Ordinance 59/2006

The investigation of the accident between DP Lesicheri and Resen was initiated in 2011 and was completed on 6 February 2012 with a final report to the Minister of Transport, Information Technology and Communications.

3.3. Studies on Safety of Railway Occurrences in 2011

In 2011 there were a total of 2037 railway occurrences, of which 88 accidents, including 1 collision of rolling stock in obstacles, 1 derailment of rolling stock, 12 collisions at level crossings, 70 accidents with people in moving rolling stock excluding suicides and 4 fires on rolling stock. The damages caused to the railway system amount to 52,457 EUR.

The analysis of the investigated railway accidents reveal that most of the accidents are accidents with people caused by moving rolling stock, collisions at level crossings with injured and dead people, fire on rolling stock without victims – 29 people committed suicide.

Railway occurrences with damages

In 2007 compared to 2006 the balance of damage/BGN is +17,572 BGN (+9,011 EUR)

In 2008 compared to 2007 the balance of damage/BGN is +232,845 BGN (+119,412 EUR)

In 2009 compared to 2008 the balance of damage/BGN is -227,792 BGN (-116,816 EUR)

In 2010 compared to 2009 the balance of damage/BGN is -226,396 BGN (-116,100 EUR)

In 2011 compared to 2010 the balance of damage/BGN is -102,290 BGN (-52,457 EUR)

In 2011 there were 2037 occurrences. Their classification by type is shown in the table below:

No.	TYPE OF OCCURRENCE	SOFIA REGION	PLOVDIV REGION	GORNA ORYAHOVITSA REGION	TOTAL
1.	Rolling stock collision	27	18	17	62
2.	Rolling stock derailment	33	23	24	80
3.	Broken switch	5	4	1	10
4.	Admission of trains on an occupied track flowed by a collision	0	0	0	0
5.	Missed train	0	0	0	0
6.	Fire on rolling stock, load, etc.	10	5	7	22
7.	Collision at level crossing	5	4	6	15
8.	Occurrences related to injured or dead people	33	42	24	99
9.	Admission of trains on an occupied track not flowed by a collision	0	1	0	1
10.	Train directed without confirmation of the neighbouring station	0	0	0	0

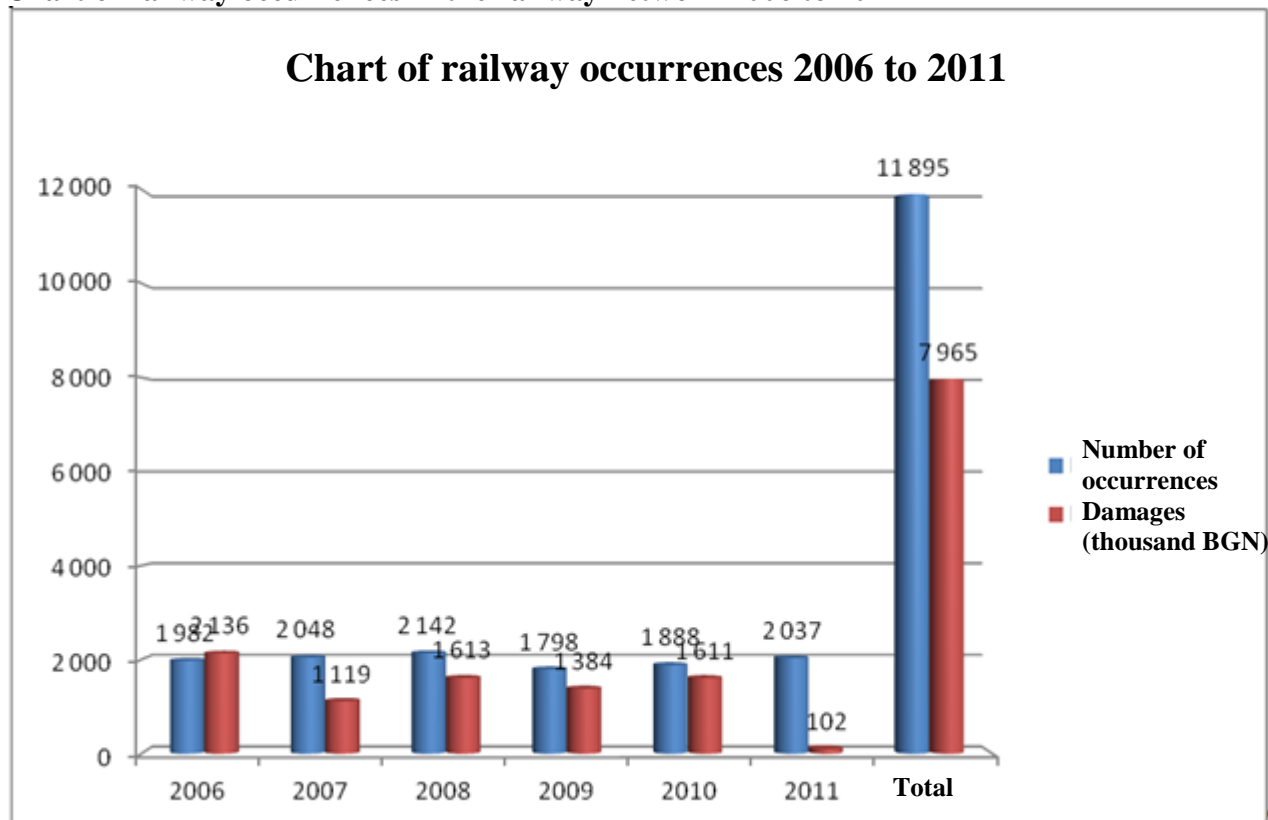


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11.	Passage on a closed signal	2	1	3	6
12.	Train directed to occupied interstation section or to wrong direction	2	2	1	5
13.	Passage through level crossing with not lowered mechanical barriers	2	0	1	3
14.	Train not provided with braking capacities	0	0	0	0
15.	Rolling stock left without open distance	0	0	0	0
16.	Damage to rolling stock - carrier	166	102	121	389
17.	Damage to rolling stock - infrastructure	5	3	2	10
18.	Damage to railroad	7	6	3	16
19.	Damage to signalling equipment	13	6	16	35
20.	Damage to overhead lines	33	25	42	100
21.	Irregular or uncoordinated actions of carriers	1	3	3	7
22.	Delayed traffic due to natural calamities, etc.	30	18	35	83
23.	Left train	216	197	149	562
24.	Removed train	65	108	30	203
25.	Untimely returned "windows"	13	6	14	33
26.	Run over animals	19	34	8	61
27.	Obstacles on the railway track	53	12	2	67
28.	Objects thrown at a moving rolling stock or other malicious actions	58	41	14	113
29.	Broken trains	27	11	17	55
TOTAL :		825	672	540	2037

Chart of railway occurrences in the railway network 2006 to 2011





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During the reporting period, the inspectors of SURAI together with inspectors of RAEA carried out inspections on undertakings – railway carriers and the railway infrastructure manager.

In 2011 the Minister of MTITC issued licenses for freight transportation to two railway carriers - State Enterprise “Transport Construction & Rehabilitation” and CARGO TRANS VAGON BULGARIA AD.

3.4. Synopsis of Investigations Completed in 2011

No investigations on accidents and incidents were completed in 2011.

3.5. Comments and Background of Investigations Initiated but not Completed in 2011

On 20 July 2011 fast train No.2615 left at 1:17 pm from Sofia Station to direction Sofia-Varna, consisting of five passenger carriages, 213 tons, carried by electric locomotive No.44-089.1 and operated by a locomotive team of a driver and assistant driver, locomotive - from locomotive depot Sofia at BDZ - Passenger Services Ltd. and a transport team of a train manager of passenger services and two conductors from BDZ - Passenger Services Ltd. During the train journey and during the stay at the stations, the locomotive team carried out an external and internal inspection of the locomotive and no visible defects were ascertained. The locomotive passed a technical inspection (TI)-2 on 15 July 2011 and an emergency repair on 19 July 2011 where the established defects were eliminated. During the train journey all speed limits were observed within the sections until the occurrence of the incident (shown by the decoded locomotive velocity record).

At 5:20 p.m. the assistant train driver looked out of the side window of the locomotive and noticed fire and smoke coming out of the middle bottom section of the locomotive. As this point he immediately reported to the train driver “Fire”, the train driver immediately activated the automatic braking of the train in a “quick stop” mode. At a speed of 118 km/h, after about 200 m the train stopped at km 271+150. After the train stopped, the train driver and the assistant driver took out the fire extinguishers of the locomotive, got off and began extinguishing the flames coming from the horizontal fans, where the train driver extinguished the fire on the right and the assistant driver – on the left according to the direction of movement. While the locomotive team was engaged with efforts to fight the fire, the transport team organized the safe evacuation of the passengers and their luggage from the carriages and took them to a safe distance. Although having exhausted all four fire extinguishers, the locomotive team failed to put out the fire that grew and entered the engine compartment of the locomotive. The train driver activated the powder firefighting system of the locomotive which failed to extinguish the fire as well. The transport team brought additional four fire extinguishers from the carriages, but they failed to put out the fire as well. The assistant train driver undertook unsuccessful attempts to detach the locomotive from the carriages, but the screw coupling was highly overtightened and failed to separate the burning locomotive from the carriages. Due to the southeastern wind at a speed of 3.4 m/sec and the high air temperature, which was 31.8°C at 6 p.m., the fire covered the whole machine and spread to the first carriage No.505229741390 of the train composition and despite the actions to disconnect the second carriage from the first carriage initiated by the train manager, the fire covered the second carriage No.505229742984, and the efforts to detach it failed. Then the members of the transport team with the assistance of the passengers managed to detach the composition between the second and third carriage with a manual maneuver and pushed the other three train carriages to a safe distance from the burning locomotive and two passenger carriages.



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The train manager reported the fire on 112 from his mobile phone at 5:26 p.m. Four fire machines were sent to extinguish the fire. The fire was localized at 7:30 p.m. The railway infrastructure clearing and restoration lasted from 7:30 p.m. to 11:20 p.m.

The fire completely destroyed the electric locomotive No. 44-089.1 and the first two passenger carriages No.505229741390 and No.505229742984 of the train composition.



Locomotive and carriages of Train No.2615 burned down



Passenger carriages of Train No. 2615 burned down

Due to the high temperature developed in the fire and the strong winds in the direction from Route 1 to Route 2, the overhead line on Route 2 melted and the elements of the superstructure and the railway track in the area of Route 1 and Route 2, where the burned carriages and locomotive were located, were damaged. The train movement was suspended along Route 1 in the interstation section DP Lesicheri – Resen from 6:03 p.m. to 11:20 p.m. After the rehabilitation works the train



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movement was restored on Route 1 and Route 2 at a speed limit of 25 km/h. There were no injured and dead passengers and staff. The investigation was completed with a final report, dated 6 February 2012, submitted to the Minister of MTITC.

3.6. Accidents and Incidents within the Last Six Years 2006 to 2011

Table of investigated accidents and incidents within the period 2006 to 2011

Investigated		2006	2007	2008	2009	2010	2011	TOTAL
	Collision of trains	-	-	-	-	1	-	1
	Collision of train with obstacle	-	-	-	-	-	-	0
Serious accidents (Art. 19, 1 + 2)	Train derailment	1	-	-	-	1	-	2
	Accident at level crossings	1	-	-	-	2	-	3
	Accidents with people caused by moving rolling stock	-	-	-	-	-	-	0
	Fire in rolling stock	-	-	1	1	1	1	4
	Accidents with dangerous freights	-	-	-	-	-	-	0
Other under Art. 21.6	None	-	-	-	-	-	-	0
Incidents		-	-	-	-	1	-	1
TOTAL		2	0	1	1	6	1	11



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Diagram of investigated accidents and incidents in the period 2006 to 2011



4. RECOMMENDATIONS

4.1 Brief Review and Presentation of Recommendations

Safety recommendations produced following the investigations of the railway occurrences in 2011 based on the national legislation and at the discretion of SURAIL.

Recommendations made within the period 2006 to 2011

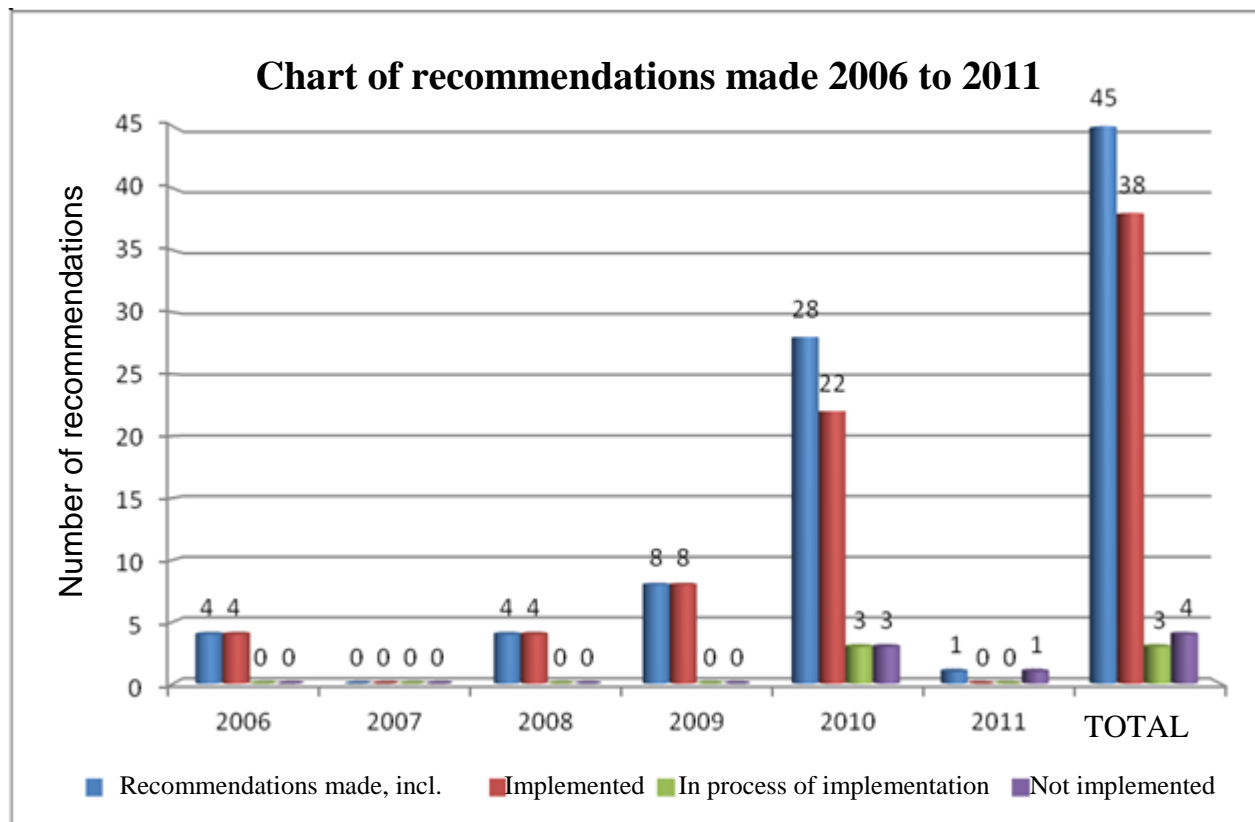
Recommendations		Status of implementation of recommendations		
		Implemented	In process of implementation	Not implemented
Year	Number	Number	Number	Number
2006	4	4	-	-
2007	-	-	-	-
2008	4	4	-	-
2009	8	8	-	-
2010	28	22	-	3
2011	1	-	-	1
TOTAL	45	38	-	4



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Diagram of recommendations made by SURAI within the period 2006 to 2011



4.2. Safety Recommendations in 2011

4.2.1 Safety recommendations in the final report on the investigation of the accident in the interstation section DP Lesicheri – Resen, Route 1, 20 July 2011

1. The managers of BDZ - Passenger Services Ltd. should order the responsible authorities to take appropriate measures and actions in order to:

- change the extinguishing system with more efficient one, providing for extinguishing of outbreaks of fire in the rectifier cabinet and other difficult to reach places on the electric locomotive;
- replace the currently used extinguishing media with a new, advanced type, providing for better fire fighting;
- explore the option of introducing additional means (pyro extinguishing materials), providing for timely and reliable extinguishing of fire outbreaks;
- based on the results of the experiments made with the new planned dry capacitors in the rectifier unit of the electric locomotives, to make timely replacement of the old components in the subsequent scheduled repairs (shear, medium and overhaul repairs);
- upgrade the fire alarm system of the electric locomotives of the same series;
- promptly remedy the leakages and losses of oil from the locomotive connections and aggregates;



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- conduct emergency instructions on fire safety and emergency actions to the locomotive teams in the event of fires in traction rolling stock and inform them about the details of this case;
- investigate the possibility of applying thermography cameras for diagnostics of thermal processes in equipment for low, medium and high voltage when the locomotives enter the facility.

Boycho Skrobanski
*State Inspector in Directorate
for Aircraft, Maritime and Railway
Accident Investigation*

Atanas Kostov
*Director of Directorate
for Aircraft, Maritime and Railway
Accident Investigation*

I, the undersigned Svetlana Velikova Milenkova certify the true translation from Bulgarian into English of the document attached – Annual Report for 2011 of Specialized Unit for Railway Accident and Incident Investigation. The translation consists of 17 pages.

Translator: Svetlana Velikova Milenkova