**ANNUAL RAILWAY SAFETY REPORT**

**2017**

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# PART 1 - INTRODUCTION

## 1.1 Purpose and scope

This document has been prepared in accordance with Article 7 of Legislative Decree No 162 of 10 August 2007 ‘Implementation of Directives 2004/49/EC and 2004/51/EC on safety and on the development of the Community’s railways’, transposing Article 18 of Directive 2004/49/EC.

It describes the safety performance, recorded during 2017, in the part of the Italian railway system under the competence of the Italian National Railway Safety Agency (hereafter ANSF) and over which ANSF performs regulatory, authorisation and supervision activities.

With the entry into force of Ministry of Infrastructure and Transport Decree of 5 August 2016, the scope of ANSF was extended to include regional networks interconnected with the national railway infrastructure considered to be of strategic importance for the Italian railway system in addition to the network managed under a concession agreement by RFI (Rete Ferroviaria Italiana S.p.A.).

As of 31 December 2017, the following railway operators are authorised by ANSF:

* **1** Infrastructure Manager (RFI – Rete Ferroviaria Italiana S.p.A.)
* **36** Railway Undertakings
  + 18 of which for goods transport
  + 10 of which for passenger transport
  + 7 of which for goods and passenger transport
  + 1 for shunting services only.

2017 saw the continuation of preliminary investigations for the issue of safety certifications or authorisations to entities operating on interconnected regional networks, but no procedure was concluded during 2017. The above Operators continued their activities under provisions issued by previously competent entities.

The data in this document refers to the entire network for which ANSF is competent, hereafter identified as (IT Network), and correspond to data relating to the (RFI Network) supplemented by data recorded for the (Interconnected Regional Networks) for 2016 and 2017 only.

This report, based on the structure of the ‘NSA annual report template - 2017 Report’ (Version 1.0) issued by the European Union Agency for Railways (ERA) on 24 May 2018, was published on the ANSF website [www.ansf.it](http://www.ansf.it) and sent to ERA and the Ministry of Infrastructure and Transport.

## 1.2 Main conclusions on the reporting year

A joint analysis of the frequency of occurrence of significant accidents and their consequences in terms of casualties reveals that the system is tending towards the achievement of zero-accident levels, taking into account changes in legislation, technical and scientific progress and serious accident prevention priorities. This aim is in line with measures laid down by ANSF in Decree 4/2012, responding to the provisions of:

* Article 8 of Presidential Decree No 753 of 11 July 1980, which states that ‘During operation of the railways, measures and precautions suggested by technical and practical experience shall be adopted to prevent accidents’;
* Article 1(1) of Legislative Decree No 162 of 10 August 2007, transposing Article 4(1) of Directive 2004/49/EC, which establishes ‘the goal of maintaining and, when reasonably practicable, continuously improving the safety of the Italian railway system, taking into account legal developments and technical and scientific progress, and giving priority to the prevention of serious accidents’.

▀ data relating to 2016 and 2017 include data recorded on the (RFI Network) and data recorded on (Interconnected Regional Networks).

The graph shows that over the period in question (2005-2017), the overall trend (continuous green arrow) is in line with the overall target (dashed green arrow). However, the 2017 data indicate a critical increase in the trend compared to 2016 due to a rise in significant accidents occurring on the (RFI Network).

The following plot reflects the trend in a qualitative system index calculated as a product of accident rates (significant accidents/Mln tr-km) and effects in terms of casualties (Deaths and severe injuries/Mln tr-km) with reference to the (RFI Network) only.

**2005**

**2009**

**2014**

**2017**

**-53%**

**-27%**

The first stage (2005-2009) shows a decrease of 53%, linked to improvements in door control equipment, effectiveness of train running protection systems and an increase in safety coverage. During the second stage, covering the period (2009-2014), the index trend is generally stable. Between 2014 and 2017, the decrease was approximately 27% as a result of specific activities linked in particular to action on trespassers, hydrogeological and hydraulic instability and measures taken on level crossings. It has not yet been possible to conduct an equivalent analysis on (Interconnected Regional Networks). During 2017 no certifications or authorisations were issued to entities operating on (Interconnected Regional Networks), which continued to conduct their activities based on authorisations received from the previously competent entities. This failure to issue safety authorisations and certifications is connected with ongoing difficulties experienced by regional infrastructure managers in providing appropriate organisational structures to support safety that are consistent with the context outlined in Legislative Decree No 162 of 10 August 2007.

The above scenario, as well as problems highlighted by audit and inspection activities, reveals a need to re-align technological equipment and organisation with parameters met by the national network in order to support the safety of railway operators performing their activities on regional networks.

Regarding the railway system as a whole, technical problems still persist. These are specifically linked to infrastructure and vehicle maintenance as well as accidents caused by trespassers, including those occurring at level crossings.

Given the above situation, during 2018 ANSF will continue with activities arising from institutional tasks assigned to it with regard to the issue of safety and standardisation certifications and authorisations. With regard to supervision, it will continue to identify its priorities, adopting a structured risk-based approach. The Agency will also:

* regarding the (Interconnected Regional Networks), be strongly involved in authorisation and certification activities as well as in monitoring and supervision of the new railway system;
* under Decree Law No 148 16/10/2017 converted by Law No 172 of 04/12/2017, continue activity started in 2017, defining technical standards and safety standards applicable to networks that are not operationally connected to the rest of the national railway system (isolated), identifiable because they are characterised by transport services that only involve these networks;
* promote actions resulting from the signing of Framework Agreements between the Ministry of Infrastructure and Transport, ANSF, Assoporti, RFI and ASSTRA to increase safety levels of connections with ports, interports and intermodal terminals;
  + continue supervision activities concerning purely railway-related aspects of dangerous goods transport;
  + promote a culture of safety in the railway system and integration of the human factor within safety management systems;
  + monitor the proper conduct by railway operators of investigations into relevant railway accidents and incidents, aiming in particular to overcome failure to act or lack of co-operation between Operators and in relation to ANSF itself;
  + promote cross-border cooperation activities;
* encourage railway operators to overcome the potential mismatch between production and commercial requirements on the one hand and safety protection on the other – and ensure effective control of their parts of the system;
* promote opportunities for meeting and dialogue with railway operators.

Railway operators must implement the following priority actions:

* align safety levels in all parts of the railway system (Interconnected Regional Networks referred to in Ministerial Decree of 5 August 2016) and bring the technological equipment on the network and vehicles into line with national standards;
* ensure the effectiveness of maintenance processes;
* limit the number of trespassers on railway lines;
* promote a positive culture of safety and integrate the human factor into their systems and into dealings with other operators;
* ensure firmer action by railway managers and undertakings with regard to safety, cooperating more effectively and ensuring effective control of their own part of the system as provided by Regulation (EU) 1078/2012.

# PART 2 – ENGLISH SUMMARY

This document is prepared according to article 7 of the Legislative Decree 9 August 2007, No 162 implementing Directive 2004/49/CE e 2004/51/CE. It describes the 2017 safety trend of the Italian railway system being under the responsibility of ANSF.

According to the Decree of the Minister for Infrastructure and Transport of 5 august 2016, the area of jurisdiction of the Italian NSA has been extended to include the interconnected regional rail networks with the national railway infrastructure deemed to be of strategic importance for the Italian railway system. In 2017 no safety authorization to infrastructure managers or safety certifications to railway undertakings on regional networks were issued; pending compliance with the provisions of the Legislative Decree 9 August 2007, No 162 and subsequent amendments, they perform their service on the basis of authorizations issued by the previously competent subjects. At 31/12/2017, the reference railway system being under the responsibility of ANSF was composed as follows:

* 1 Authorized Infrastructure Manager (RFI - Italian Railway Network S.p.A.)
* 36 Certified railway undertakings
  + 18 freight transport
  + 10 passengers transport
  + 7 freight and passenger transport
  + 1 shunting service

However, the data used in this document refer to the entire network under the jurisdiction of ANSF, hereinafter referred as [IT Network], and correspond to the data relating to the [RFI Railway Network] to which are added the values recorded on [Regional Railway Network] concerning the years 2016 and 2017 only.

The analysis of the frequency of significant incidents and their consequences in terms of victims (chart below), allows to verify the tendency of the system "to reach zero values of accidents" considering the legislation evolution, technical and scientific progress and the priorities for the prevention of serious accidents. This objective responds to the provisions of the ANSF Decree No 4/2012 in compliance with article 8 of the Decree of the President of the Republic July 11, 1980, No 753 and with article 1, paragraph 1 of the Legislative Decree 9 August 2007, No 162.

The previous chart shows that the overall trend (continuous green arrow) is in line with the general goal (dotted green arrow). A further decrease in accidents and related consequences can be pursued by:

* reducing the incident linked to the undue crossing of pedestrians, including those occurred at level crossings;
* improving maintenance processes;
* harmonizing technological levels.

In 2017, 104 accidents occurred, 99 of which on [RFI Railway Network] and 5 of which on [Regional Railway Network]. This value is increasing if compared to 2016 but it is lower than the average value for the period 2007-2017. Except for the "accidents at level crossings" and "collisions of trains against obstacles", the increase above reported is attributable to all the remaining indicators listed in Annex I of Legislative Decree No. 162 of 10 August 2007.

In 2017, the category "Accidents to persons involving rolling stock in motion" is the largest one (73%); the second category is "level crossing accidents" even if there is a decrease of about 20% between 2016 and 2017. Casualties identified as people killed and serious injured, decrease in 2017 if compared to 2016: the number of killed people falls from 85 to 55 and the number of serious injured falls from 42 to 37. However the 2016 is significantly influenced by the consequences of the accident occurred in July 2016 between Andria and Corato. The 85% of the victims (49 people killed and 29 seriously injured) are connected to trespassers including cases occurred at level crossings.

The significant accidents not caused by trespassers are those most closely related to the technical aspects and, in particular, to the malfunctioning of the structural subsystems. The number of the latter is increasing in 2017: there were, in fact, 28 accidents compared to 22 recorded in 2016. The increase recorded in this subset of accidents is mainly due to the increase in accidents related to maintenance problems on vehicles and infrastructure.

About the [RFI Network] the following picture represents the trend of a qualitative system index calculated as a product of accident [Significant accidents/Mln tr-km] and effects as casualties [People killed and serious injured/ Mln tr-km].

**2005**

**2009**

**2014**

**2017**

**-53%**

**-27%**

In the first period [2005-2009] the index decreases by 53% in association with door control equipment, effectiveness of the ATP systems, increases in safety coverage. In the second period [2009-2014] the index shows a generally stable trend. Between 2014 and 2017 the index decreases by 27% as a result of specific activities on trespassers, hydrogeological and hydraulic instability and actions implemented on level crossings. It is not yet possible to carry out an equivalent analysis referring only to [Regional Railway Network] to date.

All this premised, the objectives of ANSF for 2018 are confirmed and they aim for:

* aligning safety levels in all parts of the railway system;
* protecting the effectiveness of maintenance processes;
* reducing the number of undue crossings of the railway area;
* promoting of "Safety Culture".

# PART 3 - NATIONAL SAFETY STRATEGY, PROGRAMMES AND INITIATIVES

## 3.1 Objectives and critical areas

Every year, the Ministry of Infrastructure and Transport sets ANSF goals to be met when fulfilling tasks assigned by the applicable regulatory framework and their achievement is measured in a quantitative manner. In 2017, all the goals were met.

By 15 July each year, ANSF in turn notifies the infrastructure manager and the railway undertakings of objectives and critical areas within the railway system to allow the drawing up of an annual safety plan for the following year: priority areas that the railway operators must focus on are identified based on data from ANSF’s supervision activities and aspects notified by the railway operators in their annual safety report. In some cases, problem-solving activities may be carried out on a multi-annual basis.

For 2017, ANSF called on railway operators, with the involvement of their partners (builders, contractors, maintenance managers, owners, neighbouring network managers, foreign railway undertakings and so on), to ensure their safety plans included projects and activities to resolve problems emerging from their own risk analyses, which were:

* reported in memos from previous years on railway safety objectives and critical areas;
* indicated in the ‘Preliminary report on railway safety’;
* reported by ANSF following an analysis of accidents or incidents, inspection activities or audits indicated in recommendations of the Directorate General for Railway and Maritime Investigations or stemming from international safety alerts.

In 2017, the same long-term objective of achieving zero-accident and zero-maintenance-problem rates was pursued, together with an improvement in railway traffic safety, where feasible.

In particular, the railway operators were required, each within their own field of competence, to:

* improve their methodological approach to the safety management system;
* ensure the proper maintenance of infrastructure and railway vehicles;
* reduce the impact of human error on safety processes;
* mitigate risks derived from third-party activities;
* make the best use of the available support technologies;
* resolve specific problems:
  + ensure the efficacy of vehicle safety performance checking and monitoring activities;
  + ensure proper management of safety performance supply and control;
  + ensure that transfer of materials between depots and stations takes place using a train and not by shunting;
  + take effective action on sites subject to hydrogeological instability and on engineering structures;
  + complete the regulatory reorganisation;
  + meet standards for the placing into service of structural ground subsystems;
  + ensure proper assignment of roles and responsibilities within the organisations of entities responsible for safety, clarifying the relationship between entities involved in shunting and in the management of dangerous goods.

The Agency also noted that projects and activities falling under the above points require monitoring activities in accordance with instruments provided for in Regulation (EU) 1078/2012.

With regard to the main areas of intervention emerging from the analysis of significant accidents, the actions that ANSF has undertaken or called on the railway operators to adopt are set out below.

## 3.2 Initiatives to mitigate problems relating to the unauthorised presence of pedestrians on the track and for the protection of rail transport users

During 2017, ANSF continued initiatives for sharing rules of conduct underpinning railway safety, cooperating with other institutions including the State Police Railway Police Service (POLFER) with which it drew up a special Memorandum of Understanding in 2010. In particular, in order to teach young people an aware, responsible and safe approach to rail transport, ANSF has developed a communication strategy with POLFER and two sports federations affiliated to CONI: the Italian Rugby Federation (FIR) and the Italian Basketball Federation (FIPAV). During 2017, three days of events were held with FIR and six with FIPAV, involving the participation of approximately 17 000 young people.

A project entitled ‘Prima… vera educazione ferroviaria\_Piemonte a.s. 2016-2017’ [First... real railway education\_Piedmont a.s.) was implemented, directly involving approximately 1 200 young people. The Agency held five events in Piedmontese secondary schools and another seven events were staged by POLFER. Thirty-two schoolchildren took part in an associated competition.

Production work was completed on an advert that will form a basis for a broader communication campaign on railway safety issues to combat improper behaviour at stations, along tracks and on board trains. The advert was broadcast as a public service announcement on RAI networks and transmitted via the internet and on billboards and posters. The video is aimed especially at young people: it is made in the style of a cartoon with characters from the world of sport who already feature in a TV series familiar to this audience.

These campaigns achieve positive medium and long-term effects and must therefore be associated with short-term measures for passive protection of railway premises. For this reason, Infrastructure Managers must offer further commitment and local institutions and authorities must be made more aware of their responsibilities. It would be appropriate to encourage partnerships between institutions to carry out:

* an analysis of railway area usability and permeability conditions;
* an assessment of the effectiveness of the pedestrian/vehicular road system present near railway areas.

To combat the phenomenon of trespassing, ANSF called upon the Infrastructure Manager RFI, with the cooperation of Railway Undertakings, to perform the following specific actions:

* analyse the usability and permeability conditions of railway areas in order to assess the effectiveness of pedestrian/vehicular road systems near railways and identify points with highest event frequencies to define the planning of structural operations for mitigating the phenomenon (mobile barriers to protect construction sites, other actions aimed at constructing fences, powered barriers at station platforms and so on);
* cooperation with locally involved institutions;
* implementation of information and educational campaigns.

## 3.3 Level crossing problem mitigation initiatives

State-funded level crossing (LC) removal activities have led to a decrease of almost 55% in the number of LCs on the (RFI network) over the last 27 years (1990-2017). As of 31/12/2017, 4518 units remained out of the initial 9992. There has been an overall decrease of 102 units (of which 33 public LCs and 69 private LCs) compared to the corresponding figure at 31 December 2016. This has come about due to an ongoing project entitled ‘Suppression of public and privately-managed LCs’ as well as the decommissioning of some sections/lines, and overall changes in the network layout with consequent changes in the associated technological equipment. On average, approximately 200 systems have been removed over the last 10 years, corresponding to approximately 2% of the initial total.

On the (RFI Network) between 2007 and 2017, the achieved reduction of approximately 28% of units was reflected by a reduction of approximately 42% in significant accidents occurring at LCs.

This activity is limited by the cost and complexity and implementation times of alternative work required for complete removal of LCs. The next step toward increasing the safety of existing LCs is therefore to equip them with technological devices and maintain the high professional standards of staff.

The technical and technological actions requested by ANSF are as follows:

* equipping LCs managed by users with a technological system for opening on demand subject to absence of trains in transit;
* ensuring the efficiency of devices in use;
* improving LC circuit layouts;
* equipping LCs with systems for detecting obstacles between barriers (mainly cars stranded between barriers);
* installing barriers that pedestrians cannot get around, that do not give rise to a risk of becoming entangled when raised;
* resolving specific problems relating to parallelism between road and railway.

With this in mind, the RFI Infrastructure Manager has, in particular:

* equipped 227 LCs with PAI-PL (integrated automatic protection-LC) and/or TV-PL (television display-LC) devices, and is planning to equip further LCs at a rate of 100 units/year;
* testing has started on an electronic pedal device for level crossings (PEPL). This system is designed to ensure that the barriers do not open for a set time and then only when the train has left the appropriate binary circuit (BC). In 2017, the first equipment plan was completed with the installation of 120 devices, with plans to equip further LCs at a rate of 320 units/year;
* testing started on modular structures (aprons) deterring pedestrians and cyclists from passing under the barriers of a closed LC. It is planned to equip 200 LCs/year;
* work has started to convert 59 half-barrier LCs currently present on the network at a rate of 15 LC/year;
* checks are being carried out on roadside warning signs required by the highway code throughout the network.

However, it should be stressed that most level crossing accidents are linked to road traffic offences or in any case to improper behaviour by road users. The awareness of road users must therefore be improved through specific information and education campaigns. We must also ensure that those approaching LCs are aware of the context and specific risks they are about to encounter and therefore:

* guarantee that the roadside signals are present and properly visible;
* change the local road system where possible;
* install rumble strips or speed-reduction devices.

Similar action must also be taken on LCs on (Interconnected Regional Networks), given the density of crossings present. On these networks, a reduction of approximately 200 units was recorded between 2016 and 2017. ANSF is obtaining further information on this subject.

## 3.4 Maintenance problem mitigation initiatives

Although vehicle-side and infrastructure-side maintenance problems have fallen since last year in absolute terms, they are still at the route of approximately one third of all accidents and accident ‘precursors’.

ANSF included among its supervision priorities the verification of maintenance processes and training of staff in charge, organising targeted audits and inspections and asking for feedback following accidents and incidents.

Among the objectives and critical areas for 2017, ANSF also identified improvement of maintenance activities as an area of intervention for railway operators to be developed within the Safety Plans by:

* + thorough work organisation;
  + verifying extensive application of internal procedures;
  + optimising staff training;
  + making working instruments more user-friendly;
  + adopting internal systems to monitor the implementation of maintenance and control the part outsourced to external entities;
  + ensuring a sounder foundation for safety interventions by:
    - cooperation between railway operators and between the latter and other entities (entities in charge of maintenance, owners and builders);
    - information exchange;
    - better contractual basis for relevant aspects;
    - joint examination of common issues, particularly those underlying accidents.

Although this document refers to 2017, mention should be made of initiatives adopted in 2018, including in the wake of the accident in Pioltello. ANSF issued a circular addressed to all Railway Operators on the matter and issued further specific provisions to the RFI Infrastructure Manager, defining immediate short and long-term actions aimed at a comprehensive review of internal processes that would guarantee effective supervision of maintenance processes for which it is competent.

By issuing ‘Guidelines for certifying Entities in Charge of Maintenance of railway vehicles (excluding freight wagons)’, ANSF has also created a tool to modulate the application of Regulation 445/2011 in settings not covered by the Regulation, in order to ensure uniform application of operational standards and procedures. During 2017, ANSF monitored the application of the tool provided to operators and this led to the issue of eight certifications to entities in charge of maintenance by the certified bodies.

In 2017, the ‘Guidelines for the certification of Maintenance Workshops for railway vehicles other than wagons’ rev.01 of 19/12/2017 were issued, to provide certification bodies with common guidelines for assessing maintenance facilities on a standard basis in accordance with Regulation (EU) No 445/2011 and other applicable legislation.

ANSF used the Safety Alert to transmit critical information on the life-cycle of components used in European contexts and also obtained reports from other NSAs. In 2017, five cases were processed and can be found in the appropriate section of the website ([www.ansf.it](http://www.ansf.it)). The following specific cases arose from problems identified within Italy:

* at the Novara Boschetto, following the derailment of a vehicle included in a shunting formation, the axle of the derailed vehicle failed. Pending clear identification of the causes, following the first findings, axles of the same type made by the same manufacturer were taken out of service, and in the meantime a top speed of 60 km/h was imposed for vehicles equipped with this type of axle, their use in conjunction with trains carrying dangerous goods being prohibited;
* at Giulianova, vehicle wheel failure was identified following the triggering of a hotbox detector (HBD). The Railway Undertakings were asked to alert their operating staff and to increase checks, taking any further measures necessary to ensure the safe operation of their part of the system. Owners were asked to check whether their wagons were fitted with wheels that were part of the same casting run as the wheel concerned or otherwise manufactured by the same manufacturer, implementing all the necessary checks. The JNS (Joint Network Secretariat) procedure was activated at ERA with the aim of identifying harmonised measures to mitigate short and long-term risk and analyse the problem more thoroughly. The JNS produced short-term risk mitigation measures harmonised at European level and began the process of analysing the causes.

## 3.5 Safety recommendations

ANSF, in accordance with Article 24(2) of Legislative Decree No 162 of 10 August 2007, takes due account of safety recommendations issued by the Italian investigative body (the Directorate General for Railway and Maritime Investigations established within the Ministry of Infrastructure and Transport) and takes steps to ensure they are translated into specific measures.

In accordance with paragraph 3 of the above Article, ANSF also notifies the investigative body at least once a year of measures adopted or planned with regard to the recommendations issued.

A list of recommendations received during 2017 is given below.

|  |  |
| --- | --- |
| **Safety recommendation** | **DIGIFEMA (Directorate General for Railway and Maritime Investigations) safety recommendations on the ‘collision between working equipment in the Fortezza – Bressanone section of the Verona - Brennero line on 25/04/2017’ (Document Ref 3835/DIGIFEMA/2017 of 18/12/2017)** |
| Safety measure | *Recommendation No 1: The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to ensure that Infrastructure Managers make staff in charge of carrying out brake tests on working equipment aware of the need to carry out a brake test and ensure that procedures to be carried out by the above staff are properly implemented.*  *In particular RFI S.p.A. must consider including a specific reference to the IEFCA in the ICMO (Work Equipment Traffic Instruction) once checks have been carried out.*  *Recommendation No 2:The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to ensure that Infrastructure Managers make staff in charge of checking work equipment permitted to travel on their networks aware of the importance of visual checks on vehicles, with particular reference to safety components.*  *Recommendation No 3: The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to ensure that railway undertakings that transfer work equipment in train formations check that the relevant operating standards are being properly applied.*  *Recommendation No 4: The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to ensure that Infrastructure Operators ensure that modifications to work equipment are authorised beforehand and properly recorded in handbooks and maintenance manuals, increasing the relevant checks in accordance with current procedures.*  This Agency sent the above recommendations to the railway Infrastructure Managers and to the Railway Undertakings by means of Document Ref ANSF 3732/2018 of 27/02/2018, calling on regional Infrastructure Managers to take into account the above recommendations when issuing provisions and specifications and during the process of adapting their systems to the requirements of ANSF Decree 4/2012 and its annexes.  With regard to recommendation No 1, the RFI Infrastructure Manager was asked to introduce a specific reference to the IEFCA (Instruction on operation of automatic continuous braking for RFI trains) in parts of the ICMO (Works Equipment Traffic Instruction) governing work equipment brake testing. The RFI Infrastructure Manager was also asked to start a process of assessing procedures and systems regulating railway work site management activities to increase the related safety levels and implement requirements concerning work site interference with railway traffic. |
| Implementation status | The Agency has not yet received exhaustive feedback from all railway operators. |
| **Safety recommendation** | **DIGIFEMA safety recommendations regarding the ‘Collision between trains on 12/07/2016 between the stations of Andria and Corato on the Ferrotramviaria S.p.A. Bari-Barletta line’ (Document Ref. 3897/DGIFEMA/2017 of 20/12/2017)** |
| Safety measure | *Recommendation No 5: The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to take steps to ensure, for railways for which they are competent, that railway undertakings using the telephone block system ensure that Traffic Protocols have been drawn up in a manner consistent with the actual status of rolling stock managed by the Local Manager, avoiding the presence of uncompleted sections of the register that refer to vehicles no longer present within the station.*  *Recommendation No 6: The National Railway Safety Agency is advised to take steps to ensure that Ferrotramviaria S.p.A. adopts measures designed to prevent third parties (passengers and unauthorised personnel) from accessing premises designated for staff working in the Local Manager’s room.*  *Recommendation No 7: The National Railway Safety Agency and the Ministry of Infrastructure and Transport Directorate General for transport systems with fixed installations and local public transport are advised to take steps to ensure, for railways for which they are competent, that infrastructure managers and railway undertakings implement appropriate audit/inspection activities on staff performing safety duties with the aim of maintaining skills.*  The above recommendations were sent to the Infrastructure Managers and Railway Undertakings by means of Document Ref. ANSF 0009349/2018 of 07/06/2018, specifying:   * with regard to recommendation No 4, that using the telephone block system under normal operating conditions is not in line with the safety principles established in the ‘Railway traffic regulation’ issued by means of ANSF Decree No 4/2012. Pending the necessary technological updates or if the telephone block is used under downgraded conditions, railway operators must therefore conduct a risk assessment of the need to introduce specific measures designed to mitigate errors in recording train completeness; * with regard to recommendations No 5 and 7, that each railway operator must provide feedback on regular monitoring methods and activities carried out to maintain the skills of staff performing safety duties and on the proper implementation of tasks assigned as an integral part of the skills management system.   Lastly, recommendation No 6 has been extended to all railway operators for service premises for which it is competent. |
| Implementation status | The Agency is waiting for subsequent feedback from Railway Undertakings and Infrastructure Managers. |

## 3.6 Measures implemented unrelated to safety recommendations

ANSF continued to promote actions begun in 2016 with regard to maintenance processes, shunting, passenger train boarding and alighting doors, hydrogeological disruption, unauthorised crossing of tracks and level crossings. These actions are supplemented by those given in the following table:

|  |  |
| --- | --- |
| Sector of interest | Development of railway culture. |
| * Two meetings with trade union organisations on the implementation status of regulatory reorganisation by operators and their additional notifications; * Training of staff operating within POLFER. | |
| Sector of interest | Regulation of standardisation processes and measures. |
| ‘Guidelines for the issue of authorisations for the placing in service of vehicles and structural subsystems and authorisation for the use of general applications, general products and components’ (Guideline No 1/2017)‘Guidelines for the certification of Maintenance Workshops for railway vehicles other than wagons’, rev. 01 of 19/12/2017  * ANSF Document No[000196/2017 of 10/01/2017](https://www.ansf.it/documents/19/3733389/0001962017_100117.pdf) regarding ‘Implementation of points 4.6 and 4.7 of the Technical Specification for Interoperability for the ‘Operation And Traffic Management’ Subsystem set out in the Annex to Decision 2012/757/EU and amended by Commission Regulation (EU) 2015/995 of 8 June 2015. Adoption of principles introduced by the Technical Specification for Interoperability in national standards * ANSF Document Ref[010338/2017](https://www.ansf.it/documents/19/91ef9b44-8360-4f24-b012-caea25912e76) ‘Amendment of national standards, guidelines and clarifications for referral for medical examination and for certification of requirements. - Application of ANSF Document No 196/2017 of 10/01/2017 – ‘Implementation of points 4.6 and 4.7 of the Technical Specification for Interoperability for the ‘Operation And Traffic Management’ Subsystem set out in the Annex to Decision 2012/757/EU and amended by Commission Regulation (EU) 2015/995 of 8 June 2015. Adoption of principles introduced by the Technical Specification for Interoperability in national standards | |
| * ANSF Document No[003351/2017 of 27/03/2017](https://www.ansf.it/documents/19/cdd6975e-6999-4ebc-8710-e71b1c337358) regarding change to implementation times of ANSF Document Ref 000196/2017 of 10/01/2017 - ‘Implementation of points 4.6 and 4.7 of the Technical Specification for Interoperability for the ‘Operation And Traffic Management’ Subsystem set out in the Annex to Decision 2012/757/EU and amended by Commission Regulation (EU) 2015/995 of 8 June 2015. Adoption of principles introduced by the Technical Specification for Interoperability in national standards * ANSF Document No [010343/2017](https://www.ansf.it/documents/19/373e80ba-83a5-450c-9eb2-1f03748d3a69) ‘Accreditation of instructors and examiners for the safety activity of "Train preparation" PDT and "Train crewing" ADT as referred to in ANSF Document Ref 000196/2017 of 10/1/2017’ * ANSF Document No [003748/2017](https://www.ansf.it/documents/19/3733389/2017_4_4_ANSF%20a%20Operatori%20su%20allarme%20vigilante%20e%20soccorso%20treni.pdf) concerning the need for railway operators to adopt appropriate technical and regulatory measures aimed at the timely achievement and immobilisation of trains stopped on the line * ANSF Document No [001766/2017](https://www.ansf.it/documents/19/c6e608af-5f47-4032-97d3-e7039d0ce3e3) concerning types of movement permitted in the Italian railway system according to current regulations (including goods terminals, intermodal terminals, ports and interports). * ANSF Document No [008472/2017](https://www.ansf.it/documents/19/7f9217ec-1730-462e-9e9d-57d12c470fc8) ‘Arrangements for ANSF Decree No 01/2016 – Notification of processes to upgrade existing vehicles to the requirements of RFI Regulations No 1/2003 and No 30/2007 – Clarifications’ * ANSF Document No [008267/2017](https://www.ansf.it/documents/19/5e280ba4-19e7-4fda-9433-706bb841509f) ‘Migration from the system in force on the lines referred to in Ministerial Decree of 5 August 2016 until 15 September 2016, to "Standards for the qualification of staff employed in railway traffic safety activities’ issued by the Agency by means of ANSF Decree No 4/2012 of 9 August 2012 * ANSF Document No [004554/2017](https://www.ansf.it/documents/19/3733389/2017_4_26_ANSF%20a%20Regionali%20su%20competenze%20753.pdf) regarding the standards in Presidential Decree No 53 of 11 July 1980 that are no longer applicable to the railways referred to in Minister of Infrastructure and Transport Decree of 5 August 2016, with particular reference to standards concerning the distances between objects and railway lines and crossings and railway line parallelism * [Circular containing operating instructions for the imposition of sanctions by ANSF (Ref 0014110 of 27/12/2017)](https://www.ansf.it/documents/19/4bf3784d-122e-4b89-a32a-7ff0c6cdd749)  [Framework Agreement](https://www.ansf.it/documents/19/281741c1-d71e-48b6-8515-50bc29969b87) for the development and safety of rail links with ports – Signed on 12/12/2017 by the Ministry of Infrastructure and Transport, ANSF, RFI, Assoporti and ASSTRA | |

## 3.7 Main strategies in ANSF's international activities

In accordance with Ministry of Infrastructure and Transport (MIT) guidelines, in 2017 ANSF oversaw relationships with ERA in the field of railway safety and interoperability and participated in groups specially set up within ERA, by agreement with the MIT Directorate General for Transport and Railway Infrastructure.

ANSF provided the Directorate General for Transport and Railway Infrastructure with technical support:

* for the participation and training of the Italian posting to the European Commission and the Committee made up of Representatives of Member States (RISC);
* in groups established by the European Commission dedicated to implementation of the fourth Railway Package;
* for Rail Freight Corridors as set out in Regulation (EU) No 913/2010.

In all the committees in which it participated, ANSF encouraged the adoption of common harmonised measures by all national authorities, notwithstanding the possibility of adopting emergency measures in situations prejudicial to safety. The presence of ANSF in the ERA Group for the issue of new regulations on CSM, Conformity Assessment and Supervision (and related Guidelines) and in the Joint Network Secretariat for the Quick Response Procedure is particularly significant in this context.

# PART 4 – OVERALL RAILWAY SAFETY PERFORMANCE AND STRATEGY

## 4.1 Accident analysis feedback

The following table shows the trend in significant accidents[[1]](#footnote-2) recorded during the period 2007-2017 throughout the entire network for which ANSF is competent, hereafter referred to as the (IT Network).

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **SIGNIFICANT ACCIDENTS**  **(IT Network)** | | | | | | | | | | |
|  | | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016 (\*)** | **2017 (\*)** |
| **Train collisions** | | 4 | 2 | 3 | 2 | 6 | 7 | 4 | 9 | 5 | 4 | 2 |
| Train collisions with railway vehicles | | 2 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 2 |
| Train collisions with obstacles within the clearance gauge | | 2 | 1 | 3 | 2 | 6 | 7 | 4 | 8 | 4 | 3 | 0 |
| **Train derailments** | | 8 | 8 | 5 | 3 | 3 | 5 | 6 | 4 | 3 | 2 | 5 |
| **Level-crossing accidents** | | 19 | 9 | 5 | 15 | 18 | 13 | 14 | 16 | 19 | 15 | 12 |
| **Accidents to persons caused by rolling stock in motion** | | 83 | 79 | 73 | 77 | 77 | 79 | 71 | 74 | 67 | 72 | 75 |
| **Fires in rolling stock** | | 4 | 2 | 0 | 0 | 0 | 1 | 2 | 0 | 2 | 1 | 3 |
| **Other types of accident (\*\*)** | | 3 | 3 | 7 | 3 | 2 | 1 | 1 | 6 | 2 | 5 | 7 |
| **TOTAL** | | **121** | **103** | **93** | **100** | **106** | **106** | **98** | **109** | **98** | **99** | **104** |
| (\*) The data relating to 2016 and 2017 include data recorded on the (RFI Network) and data recorded on (Interconnected Regional Networks).  (\*\*) ‘other accidents’ means all accidents not covered by the previous cases such as derailments and impacts during shunting or by work equipment and hazardous goods spillages.  The admittedly low level of sample data shows that the railway accident rate on (Interconnected Regional Networks) over the last decade shows consistent data dispersion around the individual accident types referred to in the Common Safety Indicators (CSI) shown in Annex 1 of Legislative Decree No 162 of 10 August 2007. The most critical conditions are associated with ‘level crossing accidents’ and ‘accidents to persons caused by rolling stock in motion’, as is the case for the (RFI Network), but also with ‘train collisions with railway vehicles’. This condition reveals the need to take action on critical structural issues present in the (Interconnected Regional Network) system.  As the following graph referring to the (IT Network) shows, in 2017 the number of significant accidents per millions of train-km showed a slight increase compared to 2016, although it was below the average value recorded in the reference period. As the above table shows, an increase was recorded in all accident categories, with the exception of ‘level crossing accidents’ and ‘train collisions with obstacles’. In particular, it was found that:   * the most frequent accidents are still associated with ‘accidents to persons caused by rolling stock in motion’, which rose 4% compared to 2016, and the incidence on the annual total was more or less unchanged between 2016 and 2017; * ‘Level crossing accidents’ showed a decrease of approximately 20% between 2016 and 2017, and the incidents on the annual total of significant accidents dropped from 15% in 2016 to 12% in 2017. | | | | | | | | | | | | |

**99**

**104**

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**\***

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI  [Rete IT] | SIGNIFICANT ACCIDENTS  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Reti Regionali] | (Regional Networks) |

When the significant accidents recorded in 2017 are broken down based on the main cause, the vast majority, i.e. 73%, were associated with unauthorised presence on or crossing of the railway track by pedestrians, including cases occurring at level crossings.



|  |  |
| --- | --- |
| DITRIBUZIONE PERCENTUALE DEGLI INCIDENTI SIGNIFICATIVI RISPETTO ALLE CAUSE armo 2017 [Rete IT] | PERCENTAGE DISTRIBUTION OF SIGNIFICANT ACCIDENTS BY CAUSE 2017 (IT Network) |
| dissesto idrogeologico | hydrogeological disruption |
| indebita salita/discesa dal treno | unauthorised boarding/alighting from train |
| manutenzione | maintenance |
| errata esecuzione procedure di esercizio/manovra | incorrect execution of operation/shunting procedures |
| urto contro veicoli stradali | collisions with road vehicles |
| indebita presenza pedoni | trespassing by pedestrians |
| DISTRIBUZIONE PERCENTUALE DELLE VITTIME {MORTI e FERITI GRAVI) anno 2017 [Rete IT] | PERCENTAGE DISTRIBUTION OF CASUALTIES (DEATH AND SERIOUS INJURIES) 2017 (IT Network) |
| gli incidenti significativi nel 2017. Il dato, attestandosi al di sotto del valore medio nazionale del periodo 2007-2017, segna un incremento rispetto al 2016. | Significant accidents in 2017. The result was below the national average value during the period 2007-2017 but showed an increase compared to 2016. |
| +5 rispetto al 2016 | +5 compared to 2016 |
| causati dall'indebita presenza dl pedon sui binari. Si tratta della principale causa di morte con ľ 85% delle vittime complessive (morti e feriti gravi) del 2017. | caused by pedestrians trespassing on tracks. This was the main cause of death with 85% of overall casualties (deaths and serious injuries) in 2017. |
| -1 rispetto al 2016 | -1 compared to 2016 |
| dovuti ad indebite salite o discese da  treno in movimento. | caused by unauthorised boarding or alighting from  a moving train. |
| +2 rispetto al 2016 | +2 compared to 2016 |
| dovuti all’errata esecuzione di procedure ferroviarie [esercizio e manovre). | due to incorrect execution of railway procedures (operation and shunting). |
| +3 rispetto al 2016 | +3 compared to 2016 |
| da collegare alla manutenzione. | concerned with maintenance. |
| +7 rispetto al 2016 | +7 compared to 2016 |
| provocati da veicoli stradali sulla sede ferroviaria | caused by road vehicles on the railway track |
| -3 rispetto al 2016 | -3 compared to 2016 |
| conseguenza del dissesto idrogeologico | consequence of hydrogeological disruption |
| -3 rispetto al 2016 | -3 compared to 2016 |

In general, on the (IT Network), it emerged that:

* out of 104 accidents recorded as significant, 10 were classified as such solely on the basis of related costs (over EUR 150 000) and one accident because it had stopped traffic for longer than six hours;
* the number of collisions with pedestrians, including those taking place at level crossings, during the period (2005-2017) was relatively constant in absolute terms, but represented 73% in 2017, rising from approximately 64% of the total in 2005, which can be attributed to the reduction in other causes. The overall number of casualties corresponds to 85% of the total, amounting to 49 fatalities and 29 injuries;
* in 2017, apart from accidents caused by trespassing by pedestrians, 28 accidents were due to ‘technical reasons’, in other words malfunction of railway subsystems (infrastructure, track equipment, signalling and safety systems). This marked an increase compared to the 22 accidents recorded in 2016.

Casualties recorded on the (IT Network) in 2017 decreased compared to 2016: the number of deaths fell from 85 to 55 and the number of severe injuries from 42 to 37. The marked reduction of 35 casualties recorded between 2016 and 2017 is strongly influenced by data recorded during the last two years on (Interconnected Regional Networks) and particularly relating to the Corato accident in 2016. The situation highlights the effect of a single accident but above all emphasises the heterogeneity of the two railway systems considered.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CASUALTIES (fatalities and serious injuries) IN RAILWAY ACCIDENTS (1 fatality = 1 serious injury)**  **(IT Network)** | | | | | | | | | | |
|  | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016 (\*)** | **2017 (\*)** |
| Train collisions | 2 | 1 | 1 | 1 | 0 | 0 | 2 | 1 | 0 | 38 | 2 |
| Train derailment | 0 | 0 | 43 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| LC accidents (including those involving pedestrians) | 18 | 8 | 5 | 15 | 18 | 22 | 17 | 16 | 16 | 13 | 12 |
| Accidents to persons caused by rolling stock in motion | 83 | 83 | 73 | 82 | 80 | 83 | 73 | 76 | 67 | 76 | 76 |
| Fires in rolling stock | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Other | 1 | 0 | 4 | 2 | 0 | 1 | 0 | 1 | 0 | 0 | 2 |
| **TOTAL** | **104** | **92** | **126** | **100** | **98** | **107** | **94** | **94** | **83** | **127** | **92** |
| (\*) data relating to 2016 and 2017 include data recorded on the (Interconnected Regional Networks). | | | | | | | | | | | |

## 4.2 Analysis of the latest recorded trends

This part describes trends recorded in individual casualty and accident categories on the (IT network). Part B.1.1 shows data obtained from an analysis of the overall accident rate.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **CASUALTIES - CATEGORIES OF PERSONS (IT Network)** | | | | | | | | | | |
|  | **2007** | **2008** | **2009** | **2010** | **2011** | **2012** | **2013** | **2014** | **2015** | **2016(\*)** | **2017(\*)** |
| **PASSENGERS** | 14 | 9 | 15 | 13 | 4 | 8 | 5 | 2 | 9 | 35 | 7 |
| **RAILWAY EMPLOYEES** | 7 | 9 | 12 | 10 | 1 | 8 | 4 | 6 | 1 | 6 | 3 |
| **OTHER PERSONS:** | 83 | 74 | 99 | 77 | 93 | 91 | 85 | 86 | 73 | 86 | 82 |
| OTHER PERSONS ON PLATFORMS | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 0 | 1 | 1 | 0 |
| OTHER PERSONS NOT ON PLATFORMS | 0 | 0 | 43 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| LEVEL CROSSING USERS | 18 | 8 | 5 | 14 | 16 | 17 | 17 | 16 | 15 | 13 | 12 |
| UNAUTHORISED PERSONS ON THE RAILWAY TRACK | 65 | 66 | 51 | 63 | 77 | 74 | 66 | 70 | 57 | 72 | 70 |
| **TOTAL** | 104 | 92 | 126 | 100 | 98 | 107 | 94 | 94 | 83 | 127 | 92 |
| (\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks). | | | | | | | | | | | |

On the (IT Network) the category of ‘unauthorised persons on the railway track’ shows a negative impact on the general trend: despite a reduction in the number of deaths compared to 2016 (54 in 2016 falling to 43 in 2017), the number of severe injuries rose (from 18 in 2016 to 27 in 2017). ‘Accidents caused by rolling stock in motion’ represented the main cause of casualties in the ‘unauthorised persons on railway premises’ category as well as in the ‘passengers’ category. In particular, the former category showed a growing trend throughout the entire reference period.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| ANDAMENTO DELLE VITTIME categoria Eurostat "ALTRE PERSONE"  SCOMPOSIZIONE PER TIPOLOGIA DI INCIDENTE  [Rete IT] | TREND IN CASUALTIES Eurostat category ‘OTHER PERSONS’  BREAKDOWN BY TYPE OF ACCIDENT  (IT Network) |
| Collisioni ai treni | Train collisions |
| Deragliamenti di treni | Train derailments |
| Incidenti ai PL | LC accidents |
| Incidenti alle persone provocati da materiale rotabile | Accidents to persons caused by rolling stock |
| Incidenti di materiale rotabile | Rolling stock accidents |
| Altri | Others |
| TOTALE | TOTAL |

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| ANDAMENTO DELLE VITTIME - CATEGORIA "PASSEGGERI" SCOMPOSIZIONE PER TIPOLOGIA DI INCIDENTI  [Rete IT] | TREND IN CASUALTIES - ‘PASSENGER’ CATEGORY BREAKDOWN BY TYPE OF ACCIDENTS  (IT Network) |
| Collisioni ai treni | Train collisions |
| Deragliamenti di treni | Train derailments |
| Incidenti ai PL | LC accidents |
| Incidenti alle persone provocati da materiale rotabile | Accidents to persons caused by rolling stock |
| Incidenti di materiale rotabile | Rolling stock accidents |
| Altri | Others |
| TOTALE | TOTAL |

In the relevant time frame, with the exception of 2016 findings, the category ‘accidents caused by rolling stock in motion’ represented the prevalent type for casualties recorded among ‘staff’. The trend in this case is decreasing (next graph).

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(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| ANDAMENTO DELLE VITTIME - CATEGORIA "PERSONALE" SCOMPOSIZIONE PER TIPOLOGIA DI INCIDENTE  [Rete IT] | TREND IN CASUALTIES - ‘STAFF’ CATEGORY BREAKDOWN BY TYPE OF ACCIDENT  (IT Network) |
| Collisioni ai treni | Train collisions |
| Deragliamenti di treni | Train derailments |
| Incidenti ai PL | LC accidents |
| Incidenti alle persone provocati da materiale rotabile | Accidents to persons caused by rolling stock |
| Incidenti di materiale rotabile | Rolling stock accidents |
| Altri | Others |

Analysing numbers of ‘accidents to persons caused by rolling stock in motion’ on the (IT Network) (next graph) in relation to traffic on the network shows a barely fluctuating trend, although in recent years it has been below the average value for the period 2007-2017.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI ALLE PERSONE PROVOCATI DA MATERIALE ROTABILE IN MOVIMENTO  [Rete IT] | SIGNIFICANT ACCIDENTS TO PERSONS CAUSED BY ROLLING STOCK IN MOTION  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Rete Regionali Interconesse] | (Interconnected Regional Network) |

As in previous years, this category remains the most common and high-impact type of accident in 2017, accounting for approximately 73% of significant accidents recorded and causing nearly 83% of casualties. In 2017, only one significant accident occurred, involving multiple casualties. One of the main components of this accident is linked to the category ‘unauthorised persons on the railway track’ which is still the category with the highest impact on the overall number of casualties, showing a growing trend over the reference period (2007-2017).

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| VITTIME della categoria "PERSONE NON AUTORIZZATE"  [Rete IT] | CASUALTIES in the ‘UNAUTHORISED PERSONS’ category  (IT Network) |

In 2017, the reference value (NRV) established for the category ‘unauthorised persons on railway premises (5)’ in Italy was again exceeded. This category is clearly influenced by trespassing pedestrians. The data used to determine the National Reference Value (NRV) and any surplus refer to the entire Italian railway system (including isolated railways) and not only the part for which ANSF is responsible. The trend in casualties (previous graph) over the last few years is approximately stable. Because the actions taken have proved ineffective, solutions must be sought in areas that are not exclusively railway-related.

We will now go on to analyse accidents at level crossings and associated casualties. This indicator showed a fluctuating trend during the period in question, with values for the last five years close to the average value for the period. In 2017, they accounted for nearly 12% of total significant accidents and caused approximately 10% of casualties (see graphs below). The ‘LC casualty’ component was made up exclusively of LC users in 2017. Events also involving ‘passenger’ and ‘staff’ categories have occurred only sporadically over the years.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI AI PASSAGGI A LIVELLO  [Rete IT] | SIGNIFICANT LEVEL CROSSING ACCIDENTS  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Rete Regionali Interconesse] | (Interconnected Regional Network) |

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| VITTIME AI PASSAGGI A LIVELLO  [Rete IT] | CASUALTIES AT LEVEL CROSSINGS  (IT Network) |

On the (RFI Network) between 2007 and 2017 the achieved removal of approximately 28% of units was reflected by a reduction of approximately 42% in significant accidents occurring at LCs. To date, it has not been possible to assess the impact of the increase in technology levels.

One additional factor to be analysed is the finding relating to ‘passengers’ involved in ‘accidents to persons caused by rolling stock in motion’, which essentially refers to events that involved personal injury while boarding and alighting from the doors of passenger trains.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| VITTIME/Mln tr-km  SALITA/DISCESA DA MATERIALE ROTABILE IN MOVIMENTO  [Rete IT] | CASUALTIES/million tr-km  BOARDING/ALIGHTING FROM ROLLING STOCK IN MOTION  (IT Network) |

Casualties caused among passengers boarding/alighting from trains in 2017 were approximately 64% down compared to 2007 and approximately 30% down on the average for the period. However, there was an increase in the number of casualties compared to 2016. The accidents are mainly caused by improper behaviour but are sometimes also related to maintenance problems and incorrect application of operating procedures.

The long-term result can be mainly attributed to the introduction of high-tech systems on train doors preventing unauthorised opening, such as door locking and correct side door enablement devices. In order to further improve the values or limit the fluctuation that occurred in recent years, the above safety devices, which ANSF has progressively been making compulsory since 2009, must be maintained in proper working order by the railway undertakings. The undertakings must also consider opportunities to update existing material to the most recent standards.

In 2017, a single accident occurred. This took place on the (RFI Network), in a railway work site and led to casualties (two deaths). The data trend fluctuates greatly, as shown in the following graphs. An analysis of the accident revealed a need to improve relevant procedures, train the staff involved, conduct checks on working equipment and promote a positive culture of safety.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI NEI CANTIERI DI LAVORO  [Rete IT] | SIGNIFICANT ACCIDENTS IN WORK SITES  (IT Network) |

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| VITTIME/Mln tr-km  INVESTIMENTI DI PERSONALE OPERANTE NEI CANTIERI DI LAVORO  [Rete IT] | CASUALTIES/million tr-km  COLLISIONS WITH STAFF OPERATING IN WORKSITES  (IT Network) |

During 2017, no significant accidents were recorded connected with unauthorised maintenance work on the safety equipment. In this regard, following a request from ANSF, the RFI Infrastructure Manager reported having identified the following actions to be taken to improve operational safety:

* progressive development and application of technological solutions to minimise the discretionality and freedom of action of maintenance agents;
* ongoing improvement in training of staff assigned to security tasks and in specific work operating methodologies;
* monitoring compliance with the application of operating procedures that regulate activity implementation.

In 2017, two accidents occurred on the (IT Network) that fell into the ‘train collisions’ category: one collision (a runaway shunting locomotive struck a goods train) took place on the (RFI Network) (0 casualties) and one collision occurred between trains due to operational and technical problems regarding brake use on the (Interconnected Regional Networks).

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| COLLISIONI DI TRENI  [Rete IT] | TRAIN COLLISIONS  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |

During 2017, no significant accidents occurred due to hydrogeological instability phenomena. For problems relating to hydrogeological risk, in 2010 ANSF ordered the RFI Infrastructure Manager to provide information about network points characterised by active or potential hydrogeological disruption phenomena with associated monitoring methods and the state of implementation of associated risk mitigation actions under way or planned.

During 2017, the RFI Infrastructure Manager:

* + continued to update the mapping of points subject to hydrogeological or hydraulic problems in the network by means of specialist surveys for the compilation of dedicated survey reports;
  + began preliminary investigations and surveys to support the design of alarm systems for falling rocks for sites taking part in an introductory alarmed network installation programme. With regard to the prevention (monitoring/warning) of ‘high speed’ phenomena (collapses, rapid melts and subsidence), it finished installing an experimental alarm system on the Salerno-Reggio Calabria line (at Favazzina station);
  + reviewed the guideline for the priority ranking of railway infrastructure sections affected by hydrogeological instability based on the railway risk level to be used in planning mitigation actions and continued to implement the infrastructural action plan for risk management/mitigation.

A need for improvements has nevertheless emerged in the management of certain aspects. In particular, a review of organisational procedures is needed to support hydrogeological risk management and actions to be taken for severe weather events; problems arise when tracking restrictive measures adopted or reporting why it was not considered necessary to adopt such measures and also affect procedures used to establish whether a train can travel in the presence of such phenomena. Pending implementation of infrastructural measures for the mitigation or management of the problem, the Infrastructure Manager must adopt extraordinary monitoring actions and order train running limitations where necessary. The measures are not always adopted as quickly as necessary and mitigation actions carried out are not always effective.

Due to the geomorphological characteristics of the land crossed, hydrogeological instability has always been an issue addressed with (Interconnected Regional Network) Managers to ensure that the topic is properly dealt with in the relevant Safety Management Systems.

A situation of signals passed at danger (SPAD) is one of the main precursors of train collisions. In 2017, this occurred 32 times, which represents a considerable increase compared to previous years. SPADs have been subdivided into two categories: ‘starting against signal’ and ‘starting on yellow’. ‘Starting on yellow’ SPADs represented the highest number of cases (19 events) in 2017. They represent a great problem in situations where train running protection systems have not been installed. ‘Starting against signal’ SPADs are chiefly concerned with the interaction between train drivers and on-board crew, and have fallen since 2016 (13 events). Thirteen SPADs occurred while passing the danger point when stopping.

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| Indebiti superamenti di un segnale disposto a via impedita da parte di un treno (SPAD) periodo 2000-2017  [Rete IT] | Unauthorised signals passed at danger (SPAD) by a train, 2000-2017 period  (IT Network) |
| SPAD | SPAD |
| Partenza da fermo | Starting against signal |
| In corsa | Starting on yellow |

To take effective action against this problem, railway undertakings were asked to:

* analyse cases that had occurred, in their operational context;
* share experiences with other railway operators;
* ensure the monitoring of driving activity and verification of significant aspects on all trains (for example, train trip, passing red lights, equipment cut-out switch excluded, exceeding permitted top speed) with regard to train driving, recorded by the Driver Information System (DIS);
* check possible mitigation of human factors through action on:
  + staff training and recruitment;
  + procedures, where this activity is necessary;
  + economic aspects inside the driver’s cab, including with reference to optical and acoustic signals, which may have an effect on determining passing of signals at danger by trains.

The train running protection equipment plants (Interconnected Regional Networks) are important for containing the consequences of this type of event.

The following figure shows the trend in ‘train derailments’. In 2017, two derailments took place that did not result in casualties.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| DERAGLIAMENTI DI TRENI  [Rete IT] | TRAIN DERAILMENTS  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Rete Regionali Interconesse] | (Interconnected Regional Network) |

The available evidence shows that the five derailments (four occurred on the [RFI Network] and one occurred on the [Interconnected Regional Networks]) are associated with infrastructure maintenance problems.

The following figure goes on to analyse accident categories due to ‘fires in rolling stock’. In 2017, three accidents took place that did not result in casualties: two on (RFI Network) and one on (Interconnected Regional Networks). The accidents were caused by maintenance problems and can be traced back to a significant number of minor events, reported last year, which reveal a need for an increased focus on railway vehicle maintenance activities.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI  INCENDI AL MATERIALE ROTABILE  [Rete IT] | SIGNIFICANT ACCIDENTS  FIRES IN ROLLING STOCK  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Rete Regionali Interconesse] | (Interconnected Regional Network) |

The category ‘other types of accidents’ included all railway accidents that are not covered by any of the other categories (e.g. derailment or collision of a work or shunting vehicle, spillage of dangerous goods). They include events connected with work site and shunting safety matters (except for collisions with staff).

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

|  |  |
| --- | --- |
| INCIDENTI SIGNIFICATIVI  ALTRI TIPI DI INCIDENTI  [Rete IT] | SIGNIFICANT ACCIDENTS  OTHER TYPES OF ACCIDENT  (IT Network) |
| n° INCIDENTI SIGNIFICATIVI/Mln tr-km | NO OF SIGNIFICANT ACCIDENTS/million tr-km |
| n° INCIDENTI SIGNIFICATIVI | NO OF SIGNIFICANT ACCIDENTS |
| [Rete RFI] | (RFI network) |
| [Rete Regionali Interconesse] | (Interconnected Regional Network) |

Of the seven accidents that took place in 2017, five occurred during shunting and were categorised under ‘other types of accident’. In six incidents, the causes could be identified as incorrect execution of operating procedures and one case was connected with maintenance problems. The figure rose compared to 2016 and is higher than the average for the period. With reference to shunting activity, ANSF's supervisory actions identified:

* staff incompetence;
* organisational and interface problems between operators;
* lack of control of activities;
* incorrect management of risks arising from the provision of safety-related activities.

The actions identified have led ANSF to call on railway managers and undertakings to adopt the following measures, according to their individual competences:

* move vehicles between systems as a train;
* equip shunting locomotives with a guard and running protection systems, gradually bringing safety devices into line with the requirements of ANSF Decree No 1/2015;
* ensure better staff training;
* regulate activities with a higher level of detail in order to limit the scope for discretional action by agents involved in shunting, defining the interfaces between the various actors involved;
* continuously monitor the performance of shunting activities, including those received in service by third parties;
* regulate methods for immobilising rolling stock and safekeeping of movable scotch blocks;
* develop a positive culture of safety.

In 2017, no significant accidents occurred that directly involved dangerous goods, but seven recorded events were due to dangerous goods spillages. The 2017 value was one unit higher than in 2016.

ANSF follows this issue closely, particularly since 2009, when there was a historic peak. The 2017 rate is 86% lower than in 2009.

\*

\*

(\*) data relating to 2016 and 2017 recorded on the (RFI Network) + data recorded on the (Interconnected Regional Networks).

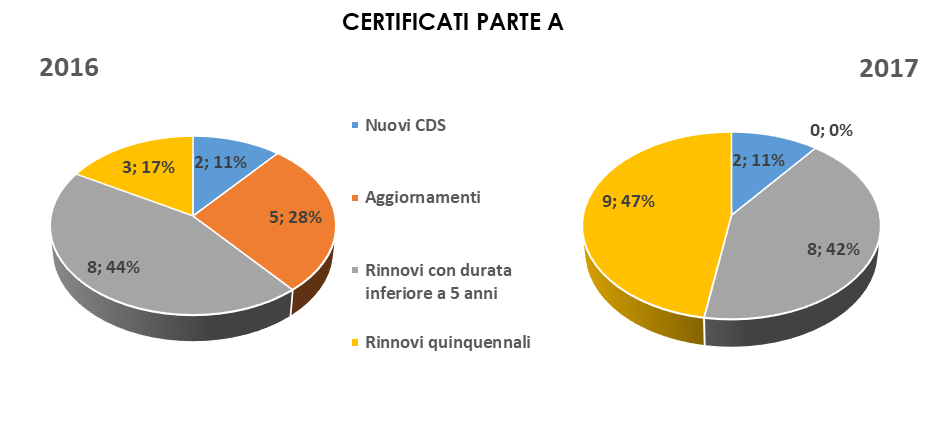
|  |  |
| --- | --- |
| ANDAMENTO DEL NUMERO DEGLI INCIDENTI E DEGLI INCONVENIENTIRELATIVI AL TRASPORTO DI MERCI PERICOLOSE COLLEGATI A PROBLEMATICHE DI CARICO O A DIFETTI DELLE STRUTTURE DEI CONTAINER  [Rete IT] | TREND IN THE NUMBER OF ACCIDENTS AND INCIDENTS RELATING TO DANGEROUS GOODS TRANSPORT CONNECTED WITH LOADING PROBLEMS OR CONTAINER STRUCTURAL DEFECTS  (IT Network) |
| n° INCIDENTI TOTALI | TOTAL NO OF ACCIDENTS |

Ministry of Infrastructure and Transport Circular 0000059-23/11/2017-D issued new ‘Check-lists for tankers used for the transport of dangerous goods in classes 2, 3, 4, 5, 6, 8, 9’ to reinforce safety arrangements for dangerous goods transport.

# PART 5 – CERTIFICATIONS AND AUTHORISATIONS

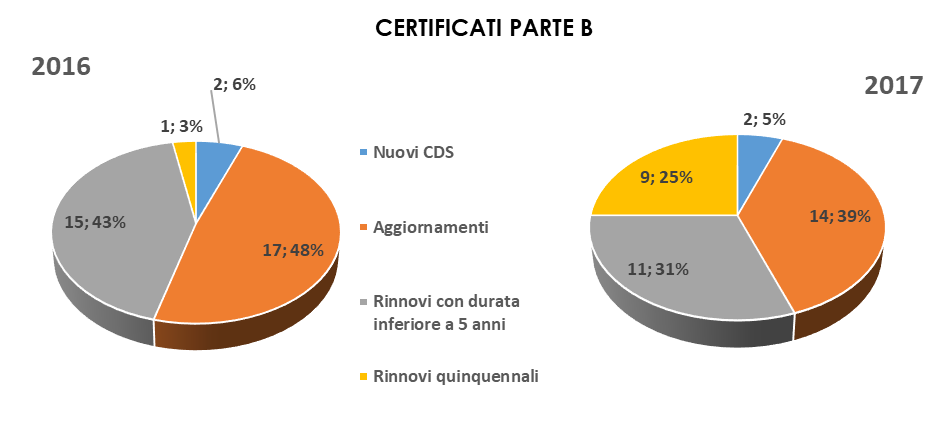
## 5.1 Safety authorisations and certifications

|  |  |
| --- | --- |
| As of 31 December 2017, a total of 36 railway undertakings held a safety certificate (SC), of which 18 for goods transport alone, 10 for passengers alone, seven for passengers and goods and one for shunting service alone.  In 2017, 19 part A SCs were issued. Compared to the previous year when 18 part A SCs were issued, an increase (from 3 to 9) was observed in the issue of five-year certificates. |  |
|  | |  |  | | --- | --- | | Distribuzione dei certificati di scurezza per tipologia di servizio - Anno 2017 | Distribution of safety certificates by type of service – 2017 | |



|  |  |
| --- | --- |
| CERTIFICATI PARTE A | PART A CERTIFICATES |
| Nuovi CDS | New SCs |
| Aggiornamenti | Updates |
| Rinnovi con durata inferiore a 5 anni | Renewals for periods under 5 years |
| Rinnovi quinquennali | Five-year renewals |

In 2017, the number of part B SCs remained essentially unchanged compared to 2016 (36 in 2017 compared to 35 in 2016) also taking into consideration the revocation of one SC from CFI Logistics Services SpA due to service termination.



|  |  |
| --- | --- |
| CERTIFICATI PARTE B | PART B CERTIFICATES |
| Nuovi CDS | New SCs |
| Aggiornamenti | Updates |
| Rinnovi con durata inferiore a 5 anni | Renewals for periods under 5 years |
| Rinnovi quinquennali | Five-year renewals |

The Decree of 5 August 2016 identified the deadline for submission of requests for Safety Authorisations (SAs) and Safety Certificates (SCs) for interconnected regional networks referred to in the relevant Annex; these deadlines (15 December 2016 to apply for SCs and 15 March 2017 to apply for SAs) were met.

Preliminary analyses carried out on 15 SC cases received showed general deficiencies in the completeness of documentation required to activate the final evaluation process by the Common Safety Methods (CSM) in force, leading to the suspension of proceedings.

Following an initial assessment of completeness, the 12 SA applications were divided into three groups:

* Group 1 (two Infrastructure Managers): complete applications for which the assessment of the documentation has been carried out in accordance with Regulation (EU) No 1169/2010 and the applicable national law;
* Group 2 (five Infrastructure Managers): applications containing some deficiencies and on which a preliminary assessment of the documentation has been carried out in accordance with Regulation (EU) No 1169/2010 and the applicable national law;
* Group 3 (five Infrastructure Managers): incomplete applications for which process suspension has been notified pending new documentation.

Following the intervening meetings and document exchanges, the situation is as follows as of 31 December 2017:

* four SA applications being assessed in accordance with Regulation (EU) No 1169/2010 and the applicable national law;
* six managers submitted updated documentation by the deadline of 29 December 2017;
* two managers requested a further extension of the documentation delivery deadline.

## 5.2 Authorisations for the placing in service of vehicles

|  |  |
| --- | --- |
| 325 provisions have been issued relating to authorisations for the placing in service (APIS) of vehicles. The following graph represents the distribution of activities in relation to the type of provision issued.  The number of vehicles authorised was 565, of which 19 new type-approvals and 546 for compliance. The following graphs show the distribution of the number of vehicles authorised in relation to type. |  |
|  | |  |  | | --- | --- | | AMIS in Conformità | APIS for compliance | | AMIS proroghe | APIS extensions | | AMIS nuovo tipo | APIS new type approval | | Autorizzazioni prove al VIS | Authorisations for testing ISV | | AMIS rinnovi e modifiche | APIS renewals/amendments | | AMIS prove | APIS tests | |

|  |  |
| --- | --- |
|  | The APIS provision is extremely complex, particularly with regard to vehicle types, because the procedure is made up of a considerable number of interim measures (authorisation to conduct tests on the line, temporary authorisations and so on) accompanied by the relevant technical supporting documentation. |
| |  |  | | --- | --- | | NUOVO TIPO | NEW TYPE | | AV compositione bloccata | AV (high-speed) with fixed formation | | carrozze | carriages | | locomotive AV | AV locomotives | | veicoli speciali | special vehicles | | carri | wagons | | Convenzionali a composizione bloccata | conventional with fixed formation | | locomotive convenzionali | conventional locomotives | | |
| The new ‘Guidelines for the issue of authorisations for the placing in service of vehicles and structural subsystems and authorisation for the use of general applications, general products and components’ (Guideline No 1/2017) were issued in 2017 to regulate and harmonise APIS issue procedures with the existing regulatory framework. This document is designed to provide all railway sector stakeholders with a tool covering all European decisions on Community railway system interoperability and national regulations. It also defines technical and administrative procedures to be implemented in order for an authorisation process to be fully effective. The above Guidelines have also streamlined technical procedures, enhanced the subdivision of subsystems involving components into phases/elements and the consequent use of Intermediate Verification Statements and further detailed cases relating to modification work (renewal or restructuring). At the same time, the technical requirements necessary for issuing an APIS have also been redefined to further harmonise them with the requirements of the Interoperability Technical Specifications and the National Reference Document.     |  |  | | --- | --- | | COMFORMITÀ | COMPLIANCE | | AV compositione bloccata | AV (high-speed) with fixed formation | | carrozze | carriages | | locomotive AV | AV locomotives | | veicoli speciali | special vehicles | | carri | wagons | | Convenzionali a composizione bloccata | conventional with fixed formation | | locomotive convenzionali | conventional locomotives | | |

## 5.3 Authorisation for the placing into service of fixed structural subsystems, general applications and general signalling products

ANSF also issues APIS for trackside and on-board railway signalling general applications (GA) and general products (GP). ANSF also issues an opinion on whether or not to initiate the authorisation procedure for placing in service under Article 19 of Legislative Decree No 191 of 8 October 2010 in the event of the renewal or restructuring of systems in operation. The annual number of APIS issued since 2013 is shown below.

|  |  |
| --- | --- |
|  | Authorisations for placing in service granted |
| 2013 | 19 (plus 6 extensions) |
| 2014 | 23 (plus 3 extensions) |
| 2015 | 25 |
| 2016 | 60 |
| 2017 | 87 |

The issuing of authorisations for infrastructural subsystems by ANSF does not allow systems to be effectively opened for operation. This must be carried out by the Infrastructure Manager after acquiring the remaining authorisations for safety matters that ANSF is not competent to grant.

## 5.4 Guidance for issuing a safety certificate

The ‘Guidance for issuing a Safety Certificate’ issued by ANSF in 2010 describes procedures, necessary requirements and documents that railway undertakings must submit to obtain a security certificate for access to the Italian railway infrastructure. Following developments in the European regulatory framework and, in particular, the release of the Fourth Railway Package, it is being reviewed, and the revised version is scheduled for issue in June 2019.

To coincide with the issue of these revised guidelines, ANSF is also preparing guidelines for the issuing of safety authorisations to Infrastructure Managers.

## 5.5 Contacts with other National Safety Authorities

During 2017, there were no requests from other National Safety Authorities or requests by ANSF to other National Safety Authorities with regards to part A and part B of the certification processes.

## 5.6 Exchange of information between ANSF and railway operators

ANSF organises an annual meeting with all railway operators to share the results of its activity and emerging problems. In December 2017, plenary meetings were held on the following topics:

* regulatory organisation, SMS and supervision with the aim of increasing awareness by railway operators of the current regulatory context;
* the new regulatory framework to which interconnected regional network managers are subject under the Decree of 5 August 2016.

During 2017, a technical panel was also set up with the RFI Infrastructure Manager to deal with emerging problems.

# PART 6 - SUPERVISION

ANSF’s inspection and audit activities conducted on railway undertakings and Infrastructure Managers were carried out using the following instruments:

* Audit activities and on-the-spot follow-up
* system audits targeting the verification of the implementation and effectiveness of the Safety Management System (SMS); these activities may cover the whole scope of the SMS or specific processes, sites, activities defined and reported in the audit programme;
* process audits targeting the verification of the implementation and effectiveness of operational processes related to railway operation safety and compliance with applicable rules; the scope of such interventions shall be specified on a case-by-case basis on the audit programme and may, where appropriate, relate to the way in which specific products or services are to be delivered and managed;
* follow-up on previous audits; this activity is structured based on an analysis of documentary evidence sent by organisations involved in the previous on-the-spot activity and indicated in the audit programme.
* Documentary assessment activity
* establishing that deficiencies identified and reported in evaluation reports issued as a result of previous documentary analyses have been overcome;
* checking compliance with the Safety Management System by railway operators (Railway Undertakings and Infrastructure Managers) with the requirements set out in Regulations (EU) No 1158/2010 and No 1169/2010 for the issue and renewal of safety certificates and authorisations;
* checking compliance of the internal rules of operators for change management with relevant legislative requirements and their compliant application in the event of applications to update safety certificates and authorisations;
* checking the correct processing of non-compliances, the adoption of appropriate corrective actions and compliance with deadlines relating to commitments made during audits or-the-spot follow-ups by means of documentary evidence submitted;
* checking compliance with applicable requirements of documentation on Management Systems of Training Centres accredited by ANSF or applying for accreditation;
* documentary assessments not covered by the cases referred to in the previous bullet points;
* Inspection activities: routine and specific inspections on staff, vehicles and installations. Routine inspections carried out randomly and continuously are primarily intended for analysis, within a statistically representative sample, of the non-conformities recorded and their frequency; specific inspections are intended to gather further information required following reports, accidents and incidents emerging from routine monitoring activity. The inspections are carried out in accordance with the principles set out in Annexes IV and III of Regulation (EU) No 1158/2010 and No 1169/2010 respectively and represent a supervision support activity intended to provide a tool for measuring the effectiveness of the Safety Management Systems of railway operators in accordance with the provisions of Article 4(1) of Regulation (EU) No 19077/2012;
* Monitoring and analysis of accidents and incidents and consequent adoption of provisions;
* Adoption of measures against the Operators involved following an analysis of recommendations issued by the Directorate General for railway investigations, and monitoring the implementation of such measures;
* Monitoring of the regulatory reorganisation implemented by railway operators.

## 6.1 Supervision activity strategy and plan

The supervision activity was planned in accordance with Regulation (EU) 1077/2012, taking into account the availability of qualified resources in relation to the specific skills required and the provisions of the Three-Year Corruption Prevention Plan.

Planning was defined on the basis of an evaluation of activities conducted in 2016 and information relating to railway system safety received from entities inside and outside the system, considering in particular:

* guidelines contained in the document ‘Objectives and critical areas in the field of railway safety’ set out in the annual report issued by the Agency;
* the term of validity of the safety certificates and authorisation or the planned term of issue in the event of first applications;
* the latest on-the-spot inspection carried out at each organisation and related outcomes;
* results of document evaluation activity for the issue, renewal or updating of safety certificates and authorisations conducted after the latest on-the-spot inspection, with particular reference to any requirements;
* outcomes of documentary follow-up of previous on-the-spot activities;
* the Ministry of infrastructure and Transport Guideline on ‘identifying National Railway Safety Agency priorities and objectives for 2017’ (Guideline No 18 of 19 January 2017), which identified the following inspection, audit and monitoring priorities:
  + as part of supervision activities on infrastructure manager and railway undertaking safety management systems, monitoring of proper implementation of maintenance activities through sample checks in the form of audits, site visits and inspections;
  + monitoring the proper implementation of safety management systems by means of sample checks on railway undertakings. The monitoring is carried out particularly on railway undertakings that carry out hazardous goods transport by rail;
  + technically and logistically supporting inspection activities conducted on all railway stakeholders upon the request of the Directorate General for Transport and Infrastructures, arranging the extension of every authorisation or conventional document found to be instrumental in implementing these activities through arrangements with the Directorate General.

The following have also been considered:

* the trend identified by the 2016 accident rate monitoring and analysis process;
* the outcome of inspection activities conducted in 2016;
* evidence set out in the annual reports of the Railway Undertakings and Infrastructure Managers;
* development of the national and EU regulatory framework;
* notifications and requests received from within and from outside ANSF;
* requests for cooperation by other NSA (National Safety Authorities), particularly from the Swiss Federal Transport Office, the German National Safety Authority and the French Safety Authority.

Activities set out in the plan were subdivided into the following types:

* documentary, compliance and follow-up evaluations;
* on-the-spot system audits designed to check the implementation and effectiveness of the railway operators’ safety management system;
* process and product audits conducted on the spot on the premises of railway operators in order to check the implementation and effectiveness of operating processes;
* follow-up on previous audits;
* inspections on staff, vehicles and systems;
* specific inspections for the purposes of investigations deemed necessary.

The plan describes intervention areas for carrying out on-the-spot audits and inspection activities identified by a risk-based approach, ensuring a definition of priorities based on the greatest risks that can be correlated to the organisations and ensuring the most uniform possible coverage of the reference system with regard to its main characteristics (type of service, type of organisation, geographical coverage and verified processes). For organisations characterised by a large geographical area, particularly complex organisation and considerable volumes of activity, the application of the stated criteria is modulated with reference to individual areas of activity/responsibility/local jurisdiction, considering the organisational structures affected by activities to be planned.

Activities with regard to Infrastructure Managers set out in Ministry of Infrastructure and Transport Decree of 05/08/2016 are defined taking into account the following priority assessment evidence as well as findings obtained from an analysis of documentation submitted during the safety authorisation application process:

* extent of operating lines among those set out in Annex A of the said Decree;
* measures (number and type) stated by the Infrastructure Manager to ensure compliance with requirements set out in ANSF Document No 009956/2016 of 29/09/2016 and ANSF Document No 010770/2016 of 19/10/2016;
* outcome of activities carried out previously on railway undertakings operating on these lines.

For activities to be performed on the RFI Infrastructure Manager, the following areas have been identified in particular:

* assessing whether the safety organisation is fit for purpose and operational activities conducted by local structures met regulatory requirements;
* implementation of safety processes defined in the Safety Management System for safe design of infrastructure, safe operation, supply of maintenance and materials and maintenance and operation of the traffic and signalling control system;

For activities to be performed on the Railway Undertakings, the following areas have been identified in particular:

* management of safety provision with particular reference to maintenance services and activities, management of interfaces with other organisations, definition of related documentation and management of the competencies of staff involved;
* application and effectiveness of Safety Management System monitoring by implementing the common method set out in Regulation (EU) No 1078/2012;
* verification of instructions given upon issue of the safety certificate;
* change management;
* management of vehicle maintenance and dangerous goods transport process;
* use of staff involved in safety activities and monitoring and control of the implementation of tasks assigned to them;
* implementation and effectiveness of improvement cycles at various organisational levels.

In both cases, the activity is expected to include the follow-up of audits conducted in previous years to check the implementation and effectiveness of actions taken following the emergence of findings, if necessary after evaluating findings submitted on corrective actions undertaken.

|  |  |
| --- | --- |
| **ACTIVITIES CARRIED OUT IN 2017** | |
| **212 activities on Safety Management Systems and railway operator operating processes** | **82 audits and on-the-spot follow-ups**   * 45 on the RFI Infrastructure Manager * six on (Interconnected Regional Network) Managers under Ministerial Decree 05/08/2016 * 28 on Railway Undertakings * three on Training Centres |
| **82 Safety Management System compliance assessments**   * 14 for the five-year renewal of the Safety Certificate, eight of which also relate to dangerous goods transport; * seven for the issuing of parts A and B of the Safety Certificate, three of which also relate to dangerous goods transport; * five for the issuing of part A of the Safety Certificate, two of which also relate to dangerous goods transport; * 16 following applications to update safety certificates already issued; * 25 assessments concerned the acceptance of findings contained in previous documentary evaluation reports; * one specific assessment on the preparation and content of safety plans; in other cases, these assessments have been included in the types of report mentioned above; * three assessments concerned other types of analysis conducted on the Safety Management System documentation in accordance with specific requests or due to needs for further investigation emerging during the assessment activities; * 11, of which four preliminary checks and seven full compliance analyses on documentation submitted by regional network infrastructure managers covered by the Ministry of Infrastructure and Transport Decree of 5 August 2016, passed the safety authorisation request acceptance stage; |
| **48 documentary follow-ups** on evidence sent by railway operators for the processing and resolution of non-compliance cases emerging in previous on-the-spot operations   * 18 on the RFI Infrastructure Manager * 23 on Railway Undertakings * Five on Managers of (Interconnected Regional Networks) pursuant to Ministerial Decree 05/08/2016 * two on Training Centres |
| **123 on the RFI Manager** | Routine inspections on the RFI Infrastructure Manager (of which 12 specific activities) on all RFI Local Production Departments. 924 elements inspected (points, tracks, engineering structures, LCs, signals, automatic block posts, track circuits, etc.), verified (15 451 checks):  0 tunnels and 11 engineering structures; 26 station yards/line sections; 46 bends/paths; 12 track line sections due to the effect of track temperature; 121 level crossings; 209 track equipment side points and 201 safety command and control side points; 161 track circuits; 40 command and control devices; seven train operating control systems; 83 ET electrification points |
| **1517 inspections on railway undertakings** (trains subject to control) for a total of 9372 elements checked | |
| **4 joint inspection visits with POLFER** on vehicles and staff involved in dangerous goods transport | |
| **24 specific inspection activities** | |
| **402 verified Railway Undertaking and RFI Infrastructure Manager service provisions and requirements** | |
| **122 appraisals for accidents and incidents** | |

## 6.2 Human resources and training

The work took approximately 39 000 hours, divided into 5 400 man-days, for the conduct of audits and inspections in 2017, with an average commitment of approximately 950 hours of work per year for each agent.

These data stem from the fact that human resources in certain sectors are fully devoted to performing supervision activities, from the preparation stage to the execution or check stage. The commitment to the various supervision activities and stages may therefore be estimated at approximately 39% of working hours and days by ANSF technical and administrative staff, where the workforce was equal to approximately 35 % of staff units present at 31 December 2017 in ANSF.

As before, training activities designed for ANSF staff in 2017 continued in accordance with the provisions of the 2017-2020 Three-Year Training Plan. Training activities involved a large number of employees and a total of 4669 training hours were provided, which covered courses arising from specific legal obligations (health and safety, anti-corruption and transparency) and courses that became necessary as a result of regulatory changes, mainly affecting administrative sectors. Training courses more strictly concerned with railway technology included the following:

* 708 total hours of in-house training for technical sectors involved in inspection activities: as before, in 2017 this training was aimed at maintaining and enhancing the technical, methodological and procedural skills required for the role. Training took place in five sessions (nine days in total) in the Florence and Rome offices;
* A total of 760 hours of railway technical training at the Rome College of Italian Railway Engineers (CIFI) delivered to recently-recruited staff in technical sectors, also extended to staff who had been working in ANSF roles for longer. The training concerned ‘signalling systems’ (15 modules: design, legislation, equipment, circuit diagrams and project drawings) and ‘Railway processes for the placing into service of structural subsystems, general applications, general products and components’ (15 Modules).

In-house technical operational-oriented training sessions were also carried out on operating regulations in March, June and September 2017.

## 6.3 Certification of entities in charge of railway freight wagon maintenance

In 2017 ANSF took part in inspection visits of the MIT (Ministry of Infrastructure and Transport)-ANSF Working Group, established by Decree of the Head of the Department for Transport, Navigation and IT Systems and Statistics, with operational functions connected with the activities of the Directorate General for Railway Transport for recognition, renewal, amendment and monitoring of Organisations certifying entities in charge of railway freight wagon maintenance.

Five monitoring activities were carried out in support of the Ministry of Infrastructure and Transport on the premises of entities who obtained Certification Body accreditation for Entities in Charge of Maintenance of railway freight trucks from the Ministry and two verification activities.

## 6.4 Coordination and cooperation

With regard to supervision, during 2017 cooperation activities with the Swiss Federal Office of Transport (FOT) continued for the conduct of joint inspections (three activities carried out).

## 6.5 Findings emerging from supervision activities

In 2017, field activities were planned at the premises of interconnected regional infrastructure managers taking into account the following priority assessment elements:

* extension of lines in operation among those set out in Annex A of the Decree;
* problems relating to implementation of the changed regulatory context;
* analysis of accident rates;
* outcome of activity carried out previously on railway undertakings operating on these lines;
* analysis of documentation submitted by Managers as part of the process of issuing safety authorisations.

Specially designed audits were carried out. These were mainly designed for conducting a preliminary assessment of the organisation for safety purposes and for a safety audit, and to provide support in understanding obligations arising from the new regulatory environment.

The aim of the operations was therefore to verify the following general aspects:

* checks on fitness for purpose of the operational safety organisation by carrying out checks on criteria and procedures adopted to ensure that the infrastructure is managed and operates in a safe manner and definition of the tasks of those responsible for safety protection;
* ability to operate under conditions of safety as defined in the Safety Management System by conducting checks on the risk management set-up and the definition and implementation of monitoring and audit activities.

The audit operations highlighted some recurrent weaknesses in the general set-up and implementation of the Safety Management System. These particularly concerned the following aspects:

* failure to define reference contexts for internal or outsourced activities and their physical and operational boundaries; in some cases, shortcomings in the fitness of the operational organisation for carrying out the activities;
* no evidence of assessments relating to relations with other divisions or facilities covered by the same corporate structure, including the performance of activities jointly between the Infrastructure Manager and Railway Undertaking and assignment of top or coordination positions in both organisations to the same roles;
* inadequate structuring of Safety Management Systems and little reference in documentation submitted to processes and activities actually implemented by Managers;
* shortcomings in the approach and completeness of the risk analysis and no evidence of implementation of mitigation measures for management of existing service and activity-related risks;
* failure to implement safety performance monitoring and control systems.

In some cases, investigations were requested into specific topics. These mainly relating to the implementation of risk control measures for specific organisational, management and systems conditions, making the Infrastructure Managers involved fully aware of their obligations arising out of the changed regulatory environment.

Supervision activity conducted in 2017 aimed at railway undertakings operating on the (RFI Network) highlighted general shortcomings with regard to:

* risk management: completeness and updating of dangerous events registers, evidence of implementation and effectiveness of mitigation measures, experience-based review of the analysis;
* management of safety supplies (including maintenance): definition of safety requirements relating to supplies in interface contracts and agreements, demonstration of proper management of risks relating to the supplies, evidence of effective audit, control and monitoring activities;
* change management: assessment approach and methods resulting from changes to the reference system compared to the provisions of Regulation (EU) No 402/2013; consequent registrations; implementation of related measures;
* monitoring of Safety Management System: definition of indicators to be evaluated, identification of appropriate reference values, methods for analysing relative performance in accordance with procedures required by Regulation (EU) No 1078/2012;
* maintenance management: records of maintenance activities in some cases do not fully comply with Safety Management System procedures and the related control system does not always ensure compliance; processes concerning return to service following vehicle maintenance contain certain design and registration deficiencies;
* ongoing improvement with particular reference to the process of management review and analysis of feedback.

Furthermore, in some cases shortcomings were recorded with regard to the clear definition of roles and responsibilities in relations between entities involved in managing dangerous goods transport and the correct compilation of check-lists provided by Ministry of Infrastructure and Transport circulars.

In cases considered most critical, requests were made for immediate action plans to be drawn up to resolve cases of non-compliance. In some cases, requests were made to supplement plans submitted and specific binding provisions were issued for certain activities to be observed during the transitional period until the non-compliances had been fully resolved. Action implementation was subject to assessment and monitoring and the feedback from follow-up activities was not always positive.

In the case of the RFI Infrastructure Manager the main problems were identified in the following areas:

* updating of technical documentation;
* activities to design new systems and modify existing systems;
* deviations from reference values of systems entities or conditions found to be non-compliant during field tests;
* definition of mitigation actions to be implemented in the event of weather alerts;
* definition of activities and responsibilities at physical or systems boundaries with other infrastructure managers;
* adoption of measures resulting from diagnostic findings, or their unavailability, or resulting from other recording systems;
* supplying the maintenance information system and recording of maintenance activities carried out;
* set-up of maintenance activity planning;
* skills management;
* controlling the work of safety staff;
* shortcomings in the assessment and investigation process in the event of accidents and incidents.

Despite an improvement in compliance with deadlines arising out of commitments undertaken and generally more structured feedback, it was noted that evidence produced was limited in many cases to dealing with non-conformities identified without any proper analysis of the causes to ensure the problem did not recur: insufficient evidence was produced to show that the initiatives undertaken had been carried out effectively.

The inspection activity highlighted the persistence of some problems: approximately 4% of findings from inspection activities on the infrastructure subsystem, approximately 6% of findings from inspection activity on the safety command and control subsystem and approximately 9% of findings from Railway Undertaking vehicles and activities were found to be non-compliant (data not comparable with previous years).

Specific inspection campaigns were also carried out (24 in 2017) in different areas. Some of the most relevant are listed below:

* + joint operations with the Swiss Confederation Federal Transport Office in the field of vehicle checks and maintenance and concerned with cross-border traffic;
  + support activities for checks carried out by the Railway Police on dangerous goods transport;
  + specific checks in the field of vehicle checks and maintenance and the work of staff with safety duties concerning trains from regional railways formerly managed under concession entering stations shared with RFI;
  + specific checks within the networks of regional railways formerly managed under concession concerning the maintenance status of rolling stock and the work of staff employed in safety activities;
  + checks on work equipment;
  + specific checks on the maintenance status of vehicles prior to specific audit activities;
  + information declared by holders and/or owners of vehicles upon registration or amendment of the information in the NVR Register;
  + conduct of review boards on staff involved in operating incidents, application of standards regarding the training processes of staff with safety duties, work of instructors and examiners involved in training staff with safety duties, accredited by ANSF and entities providing training.

# PART 7 – IMPLEMENTATION OF MAIN EUROPEAN PROJECTS

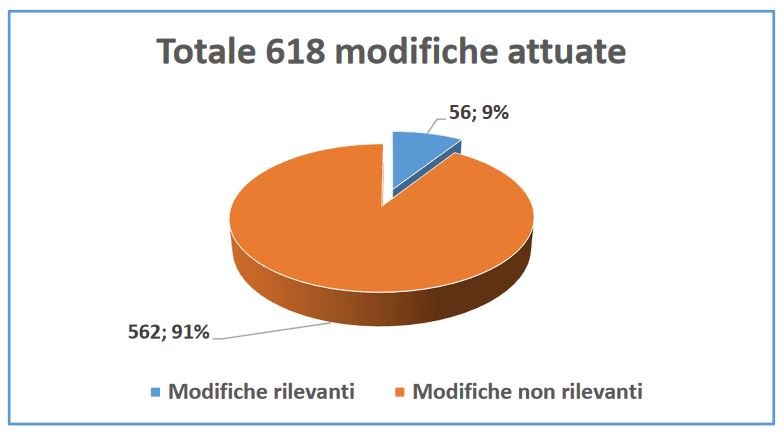
## 7.1 Application of Regulation (EU) No 402/2013 on the common safety method for risk evaluation and assessment

ANSF asked for data regarding the application of Regulation (EU) 402/2013 as described below:

* Description of the main changes deemed irrelevant by the proponent;
* Type of change (technical, operational or organisational);
* Decision-making criteria;
* Description of the main changes deemed relevant by the proponent;
* Type of change (technical, operational or organisational);
* Involvement of subcontractors and management of interfaces;
* Involvement of independent safety auditors (ISAs) in the role of CSM assessor;
* Brief description of the overall efficacy of the risk management process;
* Hazardous event identification stage;
* Risk assessment stage and acceptance criteria used:
* Codes of good practice;
* Similar reference systems;
* Explicit risk assessment;
* Demonstration of conformity with safety requirements;
* Risk management process through the recording of hazardous events;
* Short description of audits performed by the proponent on the efficiency of its risk management process;
* Brief feedback by the proponent and, where applicable, its subcontractors and ISV, with regard to the application of Regulation 402/2013;
* Where applicable: proponent's experience with regard to the application of the CSM for risk determination and assessment, in cases where the application took place on a voluntary basis prior to the entry into force of the above Regulation.

The necessary evidence of CSM application during 2017 was supplied by all certified Railway Undertakings, by the RFI Infrastructure Manager and by 11 interconnected regional network managers even though they were not yet in possession of a safety authorisation. However, no feedback was received on CSM application by railway vehicle manufacturers.

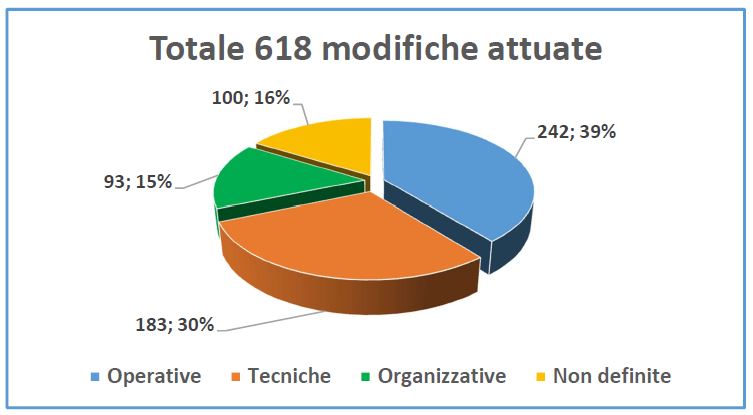
As before, in 2017 there is no immediate evidence of elements concerning the application of the CSM by operators acting as the entity in charge of maintenance. In general, apart from a few exceptions, the data provided were not complete and organised as required, with an almost total lack of feedback on the activities of CSM assessors involved or on the application of the Regulation in general.



|  |  |
| --- | --- |
| Totale 618 modifiche attuate | Total of 618 changes implemented |
| Modifiche rilevanti | Significant changes |
| Modifiche non rilevanti | Insignificant changes |

The aggregate data shows that the Regulation was applied to evaluate 618 changes with an impact on safety, of which 56 (approximately 9%) were identified as ‘significant’ changes resulting in the application of the method set out in Annex 1 of the Regulation.

The Railway Undertakings and the Infrastructure Managers identified most changes as operational changes (39%) and technical changes (30%). Organisational changes amounted to approximately 15%, while no information was given with regard to the type of the remaining 16% of changes.



|  |  |
| --- | --- |
| Totale 618 modifiche attuate | Total of 618 changes implemented |
| Operative | Operational |
| Tecniche | Technical |
| Organizzative | Organisational |
| Non definite | Not defined |

The changes reported concerning the companies Trenitalia and Mercitalia, as well as the infrastructure manager RFI, account for around 50 % of the total; the remaining 50% is distributed between other Railway Undertakings (36%) and Regional Infrastructure Managers (14%). Considering only changes evaluated in accordance with the Regulation by the railway undertakings, 10% related to SC update requests.

Seventy-two percent of annual reports received contain evidence of the existence of system procedures implemented by Railway Undertakings and Infrastructure Managers for the application of Regulation (EU) 402/2013, while only 21% of operators actually provided feedback on CSM application. Overall data on feedback provided confirms the overall inadequacy of information submitted in annual reports on the correct application of the CSM, although a clear general improvement was noted in the management of risk assessment and management processes. However, for full and effective implementation of the Regulation, all stakeholders involved must be made more aware of its requirements.

## 7.1.1 Feedback from stakeholders

Checks carried out on the application by railway undertakings of the definitive common safety method (CSM) established by Regulation (EC) No 402/2013 highlighted a set of frequent nonconformities that reveal an incomplete understanding by operators of the principles contained in the Regulation. Despite signs of improvement compared to the previous year, partly due to the evident interest in and greater awareness of the subject, there is still room for improvement in operational capacity for application of the Regulation.

Checks carried out on CSM application by railway undertakings showed an improvement in standard application of the method, which has entered permanently into operational practice. Nevertheless, in many of the cases examined, it was not found to have been applied strictly, particularly in the examination of some assessment criteria (complementarity and consequences of the incident recurred in this context) and, in general, in the production of evidence supporting the assessments adopted.

## 7.2 Application of Regulation (EU) No 1078/2012 on a common safety method for monitoring

The application of Regulation (EU) 1078/2012 was verified in annual reports submitted by railway operators under Article 13(4) of Legislative Decree No 162 of 10 August 2007. In general, little attention was given to reporting on the implementation of the Regulation and there were great differences between coverage of the subject. Two Railway Undertakings and two Infrastructure Managers sent in their annual report after the deadline set out in Article 13(4) of Legislative Decree No 162 of 10 August 2007. In 22 cases, no adequate evidence of the results obtained was provided; four cases did not consider the application of Regulation 1078/2012. Lastly, in 2017, there were instances of a railway undertaking activating the notifications referred to in Article 4(2) of the Regulation.

Compliant implementation of the CSM was also the subject of on-the-spot checking activities. The results of these checks, together with an analysis of the material submitted with the Annual Reports, show that there is a need to continue making railway operators aware of the need to adopt a structured and effective system for monitoring safety processes and performances, in full compliance with Regulation (EU) No 1078/2012.

# PART 8 – CHANGES IN LEGISLATION

## 8.1 Railway Safety Directive

Directive (EU) 2016/798 on railway safety had not been implemented by 31 December 2017. The following therefore refers to Directive 2004/49/EC because work to prepare the transposition text, in conjunction with the competent Ministry of Infrastructure and Transport facilities, began in 2018 and is aimed at guaranteeing that the transposition is issued by the planned date of 16 June 2019.

Decree Law No 148 of 16 October 2017, coordinated with conversion law No 172 of 4 September 2017 concerning ‘Urgent provisions on financial matters and for non-deferrable needs. Change to the rules on pardoning of an offence due to reparatory actions’ were published in 2017. The above Decree Law, in particular, amends Legislative Decree No 162 of 10 August 2007 ‘Implementation of Directives 2004/49/EC and 2004/51/EC relating to safety on and the development of the Community's railways’, in order to make ANSF competent for networks operationally isolated from the rest of the railway system with effect from 1 July 2019. The said Decree Law also gives ANSF the task of issuing safety and technical rules and standards applicable to the above networks by 31 December 2018.

2017 also saw the publication of Law No 50 of 24 April 2017, coordinated with Conversion Law Note 96 of 21 June 2017 concerning ‘Urgent provisions on financial matters, initiatives in favour of local authorities, further actions for areas affected by earthquakes and development measures’. This Decree Law identifies RFI as the entity responsible for implementing the necessary technological adjustments to bring the safety level of the (interconnected regional networks) listed in the Ministry of Infrastructure and Transport Decree of 5 August 2016 ‘Identification of rail networks falling within the scope of Legislative Decree No 112 of 15 July 2015, for which planning and administration functions and tasks are assigned to the Regions’ into line with that of the national railway infrastructure.

## 8.2 Changes in legislation and regulation

For information on changes, see Table 2 of Annex B.

# PART 9 – SAFETY CULTURE

P.M.

1. In this report, ‘significant accident’ refers exclusively to an accident falling within the definition set out in the Appendix to Annex 1 of Legislative Decree No 162 of 10 August 2007, as amended by Ministry of Infrastructure and Transport Decree of 26 June 2015. A 'significant accident' is thus any accident involving at least one railway vehicle in motion, resulting in at least one fatality or serious injury or significant damage to rolling stock, tracks, other installations or the environment (or damage amounting to EUR 150 000 or more) or a prolonged interruption in traffic, excluding accidents in workshops, warehouses and depots. [↑](#footnote-ref-2)