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ANNUAL REPORT 2010

Investigation of general interest rail network accidents and incidents



Rail Accident Investigation Commission – CIAF. September 2011

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Rail Accident Investigation Commission - CIAF

**Ministry of Public Works
State Secretariat for Transport
General Secretariat for Transport**

Paseo de la Castellana, 67
Madrid 28071

September 2011

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1.1. Object and scope

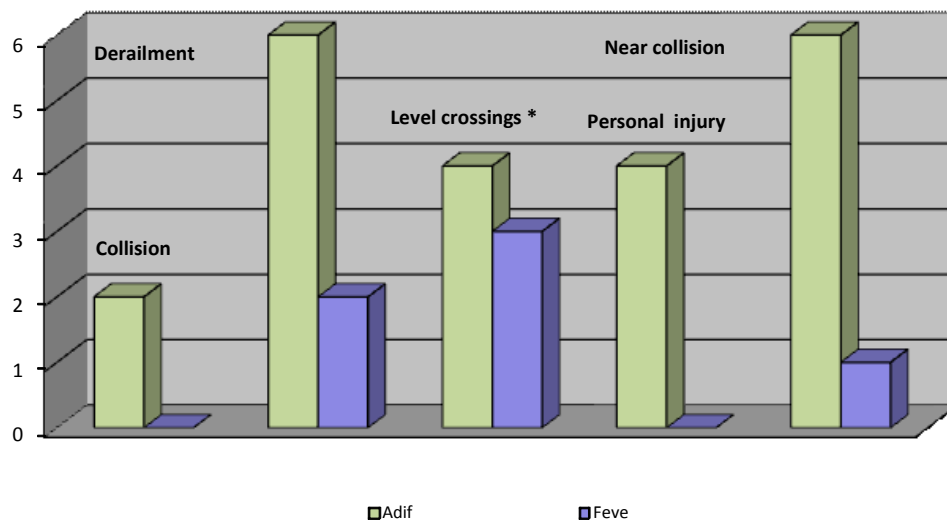
The Rail Accident Investigation Commission (CIAF) is once again submitting its annual report, the third since it was set up and the sixth since the European Safety Directive 2004/49/EC created the obligation of producing a report every year summarising the investigations carried out annually by the national investigation body, **a document that is not, under any circumstances, representative of the rail accident rate in our country.**

This report has been drawn up within the timeframe – 30 September 2011 – laid down in Article 25 of Royal Decree 810/2007 which transposes the abovementioned directive and summarises, as in previous years, all the technical investigations initiated – **and now all concluded** – by the CIAF concerning rail accidents and incidents taking place on the General Interest Rail Network (RFIG) between 1 January and 31 December 2010 that were notified by the infrastructure administrators (Adif (Railway Infrastructure Administrator), Feve (Narrow-gauge Railways) and the Port Authorities) and the rail companies.

During 2010 it was considered appropriate to investigate a total of 28 events, from the 72 notified, that took place on the RFIG and the cataloguing of which is given in the following table and graph:

NETWORK TYPE	Accident				Incident	Total
	Collision	Derailment	Level crossings *	Personal injury	Near Collision	
Adif	2	6	4	4	6	22
Feve	0	2	3	0	1	6
Total	2	8	7	4	7	28

*Includes persons struck at level crossings.



1.2. Introduction of Safety Directive 2004/49/EC

In Spain, the legislative transition process, initiated through promulgation of the Railway Sector Act (Law 39/2003 of 17 November 2003, BOE (Official State Gazette) Nº 276 of 18 November) and the regulation that implements it (Royal Decree 2387/2004 of 30 December 2004, BOE Nº 315 of 31 December), culminated in the approval of the **Regulation concerning traffic safety on the General Interest Rail Network (Royal Decree 810/2007 of 22 June 2007, published in BOE Nº 162 of 7 July)**, which transposed Directive 49/2004 on safety on the Community's railways, and revoked the text relating to accident investigation that the abovementioned Railway Sector Regulation contained.

The entry into force of the new safety regulation involved, among other things, the creation of a new investigation body: the CIAF, which replaced the Railways Directorate (DGF) for this task.

In November 2009, the Commission of the European Communities published **Commission Directive 2009/149/EC amending Directive 2004/49/EC which refers to Common Safety Indicators and common methods to calculate accident costs (published in OJEC, L313/65)**. This amends Annex 1 of the safety directive and adds an appendix giving definitions for Common Safety Indicators.

This new directive was transposed into our legal system by way of **Royal Decree 918/2010 of 16 July 2010, published in BOE Nº 189 of 5 August**, partially amending the current railway safety regulation (Royal Decree 810/2007).

1.3. Rationale and objectives of accident and incident investigation

The purpose of the rail accident and incident investigation is to determine the causes of same and the circumstances in which they are produced, with the aim of avoiding them in future by making appropriate recommendations to reduce risks in rail transport.

This investigation does not, under any circumstances, seek to determine culpability or liability and is irrespective of any judicial investigation, as stated in Directive 49/2004/EC and Article 21(6) of the Traffic Safety Regulation.

The investigation of relevant railway events (serious accident, accident and incident) gives rise to the production of a technical report which contains data relating to the event, the investigations undertaken, the conclusions and, where appropriate, the recommendations made.

The CIAF, during its third full year of responsibility for rail accident investigation, and continuing with the trend of the previous year, focussed on investigations of events (accident and incident) the causes of which relate more to the railways than to the careless behaviour of third parties.

1.4. CIAF activities

1.4.1. Plenary meetings

During 2010 the CIAF Plenary Meeting was held once a month, except for August (holiday period). At these meetings it is decided which events, in addition to the most serious, should be investigated out of those that were notified to the CIAF in the period between two Plenary Meetings and, additionally, the technical investigators raise their technical reports of the investigated events to be approved by the Plenary Meeting, if necessary, and the latter makes the recommendations that it considers appropriate. Subsequently they are passed on to the interested parties as well as being made public.

The decisions taken by the Plenary Meeting, except for approval of the final report which is done by resolution, are expressed through agreements that are passed on to their intended recipients. During 2010, the Plenary Meeting issued 31 resolutions and 97 agreements.

1.4.2. Attendance at meetings of the European Railway Agency (ERA)

The CIAF forms part of the network of national investigation bodies (NIB) and attends periodic meetings – generally three times a year – held in the Agency’s office in the French city of Lille.

This group, composed of the investigation bodies of various Member States, through meetings and the work that it carries out, endeavours to ensure that, in the European Union, rail accident and incident investigations are homogeneous and that the criteria established by the safety directive are applied by all in a uniform way.

The group also serves as a forum for sharing information and experiences between the European investigation bodies.

During 2010 the CIAF, represented by its Secretary, attended three meetings (in February, June and October).

It should be emphasised that, in the meeting held in October, the CIAF was invited to make a presentation of the details and status of the investigation of the large number of railway users struck at the halt of Platja de Castelldefels (Barcelona) on the night of 23 June 2010 (see point **4.3.2.4. – Accidents to persons caused by rolling stock in motion**), which caused 12 fatalities, 10 seriously injured and 7 slightly injured victims.

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With regard to this event, which had significant press coverage both in the national and international mass media, the Commission consulted members of the NIB network in order to recompile information on the different measures existing in the Member States to dissuade railway users from crossing the rails at unauthorised locations.

Also in October, three representatives of the Agency's safety department were invited to get to know the CIAF's operations. Two days of workshops were held, where the working methods of the CIAF as well as its activities as an investigating body CIAF were presented.

1.4.3. Preliminary examinations (background studies)

Since it was set up, the CIAF has adopted various approaches concerning the decision as to whether or not to investigate a railway event. In the first phase, events were investigated according to their seriousness, concentrating efforts on those accidents that had resulted in at least one fatality.

Gradually, and based on experience acquired, the criterion has been modified, concentrating the investigation on those events from which lessons may be drawn for the improvement of rail safety, even where there have been no victims.

Nevertheless, there are cases in which the initial data complicate decision-making as to whether to investigate an event or not, and the advance knowledge as to whether such investigation may give rise to considerations regarding safety.

In order to alleviate this, in 2010 it was decided in some cases to carry out a preliminary analysis of the main aspects and circumstances of the event, which was described, in the beginning, as the 'background study' and latterly as the 'preliminary examination'.

These preliminary examinations are carried out by the CIAF secretariat and serve as the basis for decision-making by the Plenary Meeting as to whether to investigate a particular event. That is why they are not as exhaustive as the final reports of accidents and incidents that are investigated, but they give an in-depth overview of the fundamental aspects without making recommendations.

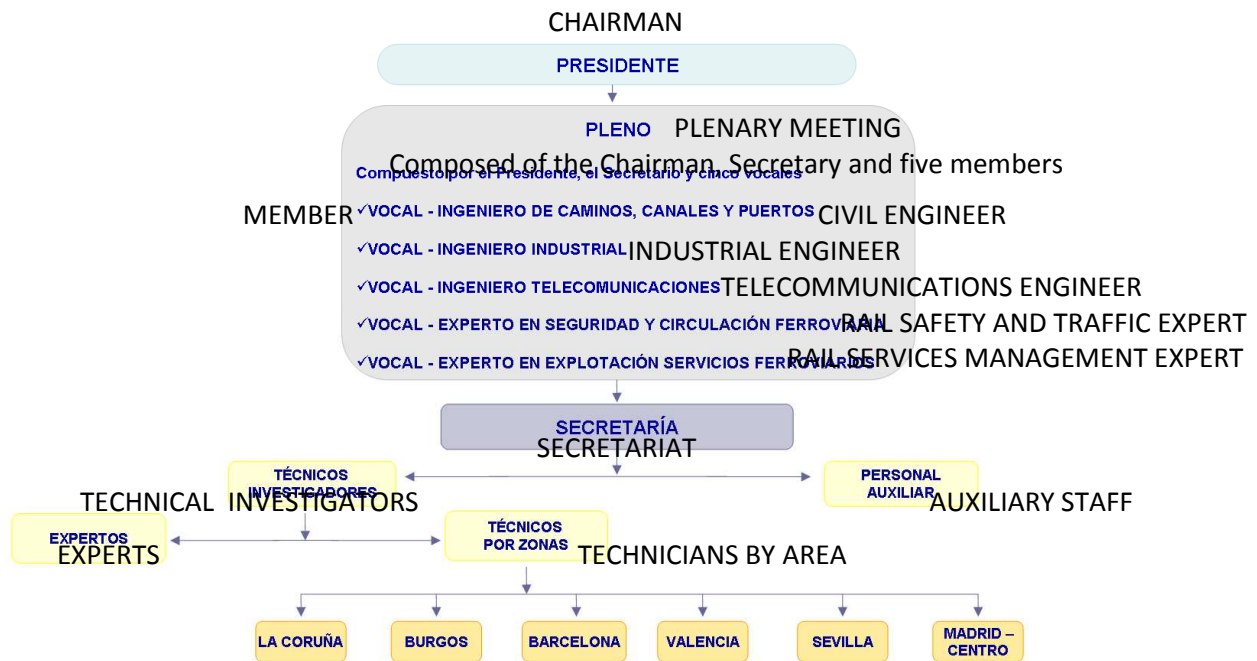
In 2010 there were four events covered by a preliminary examination, involving collisions with vehicles at level crossings, people being hit at stations, one train derailment and one running through a switch, with the decision being taken to investigate one of these.

2. ORGANISATION OF THE RAIL ACCIDENT INVESTIGATION COMMISSION

The CIAF, set up on 11 December 2007, is a specialised collective body comprising the Chairman, the Plenary Meeting and the Secretariat.

The Plenary Meeting, in its turn, is composed of the Chairman, five Members and the Secretary.

The Commission is attached to the Ministry of Public Works and, since 15 May 2010, is dependent on the General Secretariat for Transport.



The Commission relies on two investigative technicians, attached to the Secretariat, who are responsible for carrying out investigations and producing the corresponding reports, counting on the cooperation of a team made up of safety managers from the companies involved in the investigated event.

The CIAF also has the support of a territorial framework of technicians who, by way of an agreement, are provided by Ineco, a transport engineering consultancy. These technicians are permanently on call but are not exclusively assigned to the task.

In order to carry out its work, the Commission has drawn up specific rules which serve as the basis for establishing types and separate stages in the investigation of an event.

3. APPLICABLE LEGISLATION FOR THE INVESTIGATIVE PROCESS

The CIAF, after the initial phase in which it provisionally agreed to maintain the Circular Orders that until then had given details of the investigative process, produced and approved, in the first few months of its operation, the following Circular Orders: **Circular Order 1/2008 ‘Procedures for technical investigation of rail accidents falling to the Rail Accident Investigation Commission’** and **Circular Order 2/2008 ‘Notification of rail incidents and suicides’** which laid down the basic guidelines to be followed by the CIAF in the investigation of railway events of general interest.

Subsequently, it published the document **Technical investigation procedures for rail accidents and incidents**, in October 2008, which sets out basic procedures and defines the process for investigation of rail accidents and incidents. These procedures revoked Circular Order 1/2008, except for accidents to persons caused by rolling stock in motion (unless they occurred at level crossings).

Finally, in May 2009, the Commission completed the procedures for investigation with publication of **Procedures for technical investigation of accidents to persons caused by rolling stock in motion**, thereby revoking Circular Order 1/2008 as a whole.

In 2010 there was no legislation in addition to the above.

4.1. Classification of events

The investigation of rail accidents and incidents carried out by the CIAF is based on the definitions of accident, serious accident and incident and on that which is laid down in Article 21.3 of the **Regulation concerning traffic safety on the General Interest Rail Network (Royal Decree 810/2007 of 22 June)**. Those definitions are as follows:

'Accident: *an unwanted or unintended sudden event or a specific chain of such events which have harmful consequences; accidents are divided into the following categories: collisions, derailments, level-crossing accidents, accidents to persons caused by rolling stock in motion, fires and others.'*

'Serious accident: *any collision or derailment of trains, resulting in the death of at least one person or serious injuries to five or more persons or extensive damage to rolling stock, the infrastructure or the environment, and any other similar accident with an obvious effect on railway safety regulation or the management of safety; extensive damage means damage that can be immediately assessed by the investigating body to cost at least EUR 2 million in total.'*

'Incident: *any occurrence, other than accident or serious accident, associated with the operation of trains or rolling stock and affecting the safety of operation.'*

Article 21.3: *'In reaching a decision to investigate rail accidents not classed as serious and rail incidents, the Rail Accident Investigation Commission shall assess the following circumstances:*

a) the importance of the accident or incident;

b) whether it forms part of a series of accidents or incidents with repercussions for the system as a whole;

c) the repercussions for the safety of rail transport;

d) requests from the Rail Infrastructure Administrator, the rail companies or the Ministry of Public Works.'

The criterion adopted by the CIAF for the investigation of accidents has been to undertake the investigation, in addition to the serious accidents that it is obliged to cover, of those other events (accidents and incidents) the analysis of which may result in an improvement in safety within the railway system.

Consequently, by continuing with the criterion established by the Commission in 2009, during 2010 none of the fatal accidents occurring on the RFIG was investigated, the cause of which can obviously be attributed to the careless behaviour of third parties and, conversely, other non-fatal accidents and incidents were studied, the examination of which was deemed to offer lessons for reducing the accident rate, such as how derailments and near collisions are mainly determined.

4.2. Investigated events on the General Interest Rail Network: investigations undertaken

4.2.1. Distribution by type

As stated above, during 2010 a total of 28 events were investigated (from a total of 72 notified) that occurred on the RFIG and the classification of which is given in the following table:

NETWORK TYPE	Accident				Incident	Total
	Collision	Derailment	Level crossings *	Personal injury	Near collision	
Adif	2	6	4	4	6	22
Feve	0	2	3	0	1	6
Total	2	8	7	4	7	28

Of the investigated events, the highest percentage - 28% - relates to accidents owing to derailment, followed by level-crossing accidents and incidents of near collision, which represent 25% each. 71% of investigated events relate to occurrences in which there were determining factors relating to the railway system.

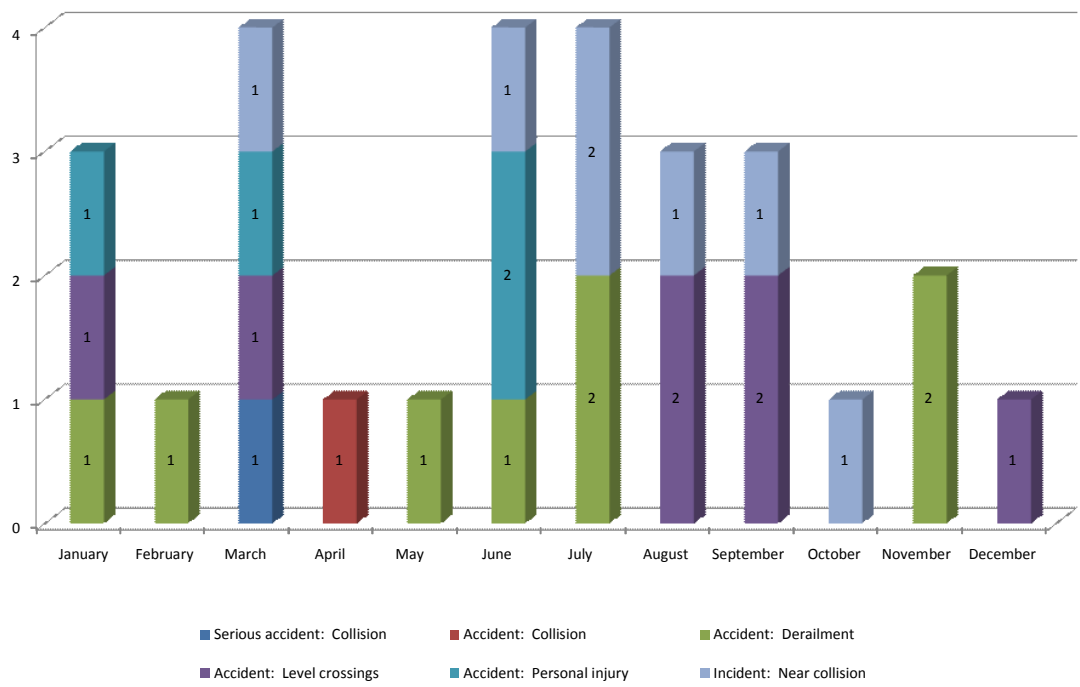
4.2.2. Monthly distribution

The monthly average for events covered by an investigation was 2.3.

MONTHLY DISTRIBUTION OF INVESTIGATED ACCIDENTS AND INCIDENTS

NETWORK TYPE	Serious accident	Accident				Incident	Total
	Collision	Collision	Derailment	Level crossings *	Personal injury	Near collision	
January			1	1	1		3
February			1				1
March	1			1	1	1	4
April		1					1
May			1				1
June			1		2	1	4
July			2			2	4
August				2		1	3
September				2		1	3
October						1	1
November			2				2
December				1			1
Total	1	1	8	7	4	7	28

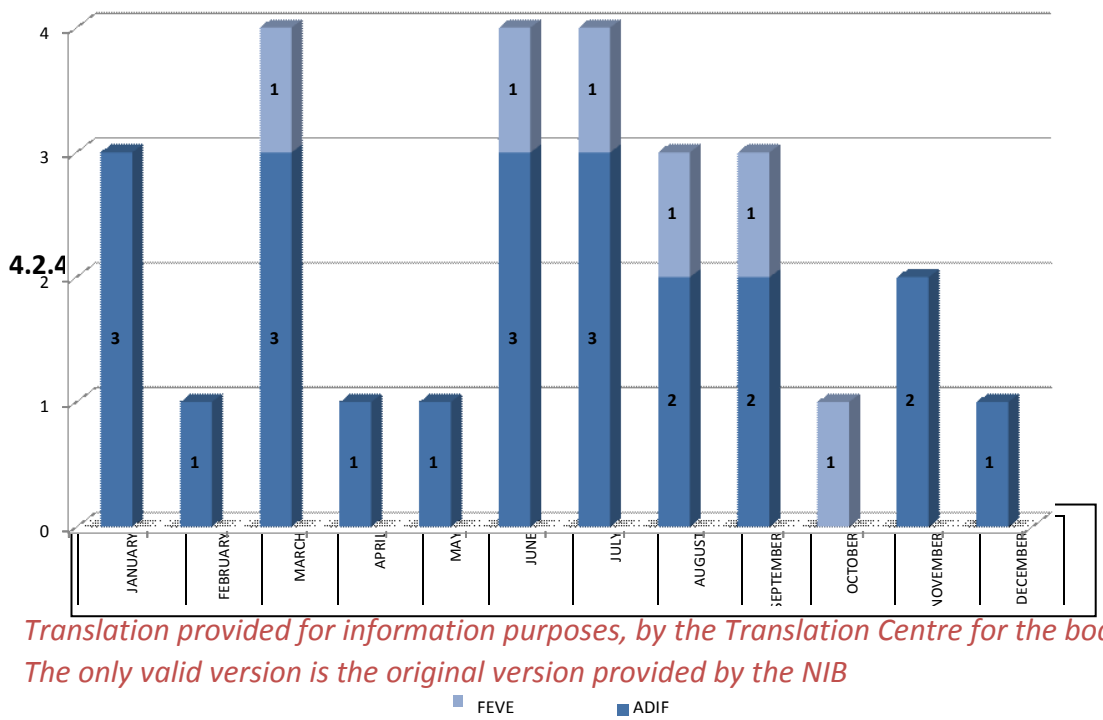
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4.2.3. Distribution by network

Breaking them down by rail network, of the 72 events notified (56 accidents, 10 incidents and 6 suicides), 28 were investigated: 22 occurring on the rail network administered by Adif (16 accidents and 6 incidents) and 6 on the network managed by Feve (5 accidents and 1 incident).

The graph shows the monthly distribution of investigated accidents and incidents in the financial year 2010, grouped according to the rail infrastructure administrators who manage the rail network.



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Accident rate of investigated events

Out of the total of investigated accidents and incidents there were 35 victims, of which 24 were fatal and the remaining 11 seriously injured.

Monthly distribution, according to the networks and classification of the event, is given in the table below.

Of the 24 fatalities produced by the investigated accidents, 14 (58%) resulted from them being struck (on the open line and at stations), 8 (33%) at level crossings and 2 (9%) in collisions of rolling stock.

Classification	Type	Month	Adif		Feve		Total FC	Total SI	
			Fatalities	Seriously injured	Fatalities	Seriously injured			
Serious accident	Collision	March	1				1		
Total SERIOUS ACCIDENT			1				1		
	Collision	April	1				1		
		January							
		February							
		May							
		June							
		July							
		November							
		January	1				1		
	March				1	1			
	August	1			1	2			
	September	2	1		1	3	1		
	December	1				1			
	January	1				1			
	March	1				1			
	June	12	10			12	10		
	Total ACCIDENT			20	11	3	0	23	11
			March						
June									
July									
August									
September									
October									
Total INCIDENT			0	0	0	0	0	0	
Total GENERAL			21	11	3	0	24	11	

4.2.5. Average time for production of reports

The following table shows the time (in months) that elapsed once it was decided to investigate an event until the final report is approved.

The average was 7 months, this being the period of 39% of the reports produced. In 25% of cases it was less and in the remaining 36% it was more.

MONTHS TYPE	Accident				Incident	Total
	Collision	Derailment	Level crossings *	Personal injury	Near collision	
4			2	1		3
5		1	1			2
6			2		1	3
7		4	1	2	3	10
8	1	2			3	6
9	1					1
10			1	1		2
12		1				1
Total	2	8	7	4	7	28
Average	8.5	8	6.4	7	7	7.63

4.2.6. List of investigated events

The following table summarises, by file number, the main details of each of the events that have been investigated. All investigations started in 2010 have already been completed.

NETWORK	OPERATOR	FILE.Nº	DATE	MUNICIPALITY	PROVINCE	LÍNE	K.P.	FATALITIES	SERIOUSLY INJURED	EVENT CLASSIFICATION	TYPE	VEHICLE PEDESTRIAN	LOCATION	STATUS	RECOMMENDATIONS
ADIF	RENFE OPERADORA	0002/10	15/01/2010	Villa-real	Castellón	600 Valencia-San Vicente de Calders	62.902	1	0	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0003/10	15/01/2010	Getafe (Getafe industrial)	Madrid	300 Madrid-Valencia	13.860	1	0	ACCIDENT	PERSONAL INJURY	PERSON	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0006/10	10/01/2010	Seville (Cambiador Majarabique)	Seville	400 Alcázar de San Juan-Cádiz	568.250	0	0	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	5
ADIF	RENFE OPERADORA	0008/10	11/02/2010	Pinar de las Rozas (Las Rozas)	Madrid	912 Las Matanzas-Pinar de las Rozas	20.658	0	0	ACCIDENT	DERAILMENT	TRAIN	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0014/10	05/03/2010	Dueñas	Palencia	100 Madrid-Hendaya	278.952	1	0	ACCIDENT	PERSONAL INJURY	WORKER	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0016/10	10/03/2010	Logroño	Logroño	700 Caseras-Intermodal Abando Indalecio Prieto	76.396	0	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
FEVE	FEVE	0017/10	11/03/2010	Villaquilambre	León	31 León-Bilbao	5.037	1	0	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	TRACK	CLOSED	2
ADIF	RENFE OPERADORA	0018/10	26/03/2010	Martín Muñoz de la Dehesa-Arévalo	Segovia	100 Madrid-Hendaya	172.050	1	0	SERIOUS ACCIDENT	COLLISION (OF TRAINS)	TRAIN	STATION	CLOSED	3
ADIF	RENFE OPERADORA	0020/10	08/04/2010	Silla (Silla Contenedores)	Valencia	300 Madrid-Valencia		0	0	ACCIDENT	COLLISION (ROLLING STOCK)	ROLLING STOCK	TERMINAL	CLOSED	1
ADIF	RENFE OPERADORA ARMY	0026/10	23/05/2010	Pozuelo	Madrid	910 Madrid atocha Cercanías-Pinar de las Rozas	5.114	12	10	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	1
FEVE	FEVE	0028/10	14/06/2010	Ortigueira	A Coruña	11 Ferrol-Oviedo	43.559	0	0	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	1
ADIF	RENFE OPERADORA	0030/10	23/06/2010	Platja de Castelldefels	Barcelona	200 Madrid-Barcelona	656.598	0	0	ACCIDENT	PERSONAL INJURY	PERSON	HALT	CLOSED	0
ADIF	RENFE OPERADORA	0031/10	26/06/2010	Vitoria-Gasteiz	Álava	100 Madrid-Hendaya	492.400	0	0	ACCIDENT	PERSONAL INJURY	PASSENGER	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0032/10	29/06/2010	Sant Andreu Arenal	Barcelona	220 Lleida Pirineux-L'Hospitalet de Llobregat	361.100	0	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0033/10	05/07/2010	Móstoles (Móstoles-soto)	Madrid	920 Móstoles El Soto-Parla	20.655	0	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0036/10	10/07/2010	Llodio	Álava	700 Casetas-Intermodal Abando Indalecio Prieto	230.862	0	0	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	3
FEVE	FEVE	0038/10	14/07/2010	Ribadeo (Reme)	Lugo	11 Ferrol-Oviedo	148.845	0	0	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	2
ADIF	RENFE OPERADORA	0039/10	16/07/2010	Rio Duero	Valladolid	AV 810 Madrid Chamartín-Valladolid Campo	168.867	1	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION (HOME)	CLOSED	0
FEVE	FEVE	0044/10	09/08/2010	Cabezón de la Sal	Cantabria	21 Oviedo-Santander	489.795	0	0	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	TRACK	CLOSED	1
ADIF	RENFE OPERADORA	0046/10	17/08/2010	Ponferrada	León	800 A Coruña-León	250.553	1	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0047/10	18/08/2010	Utrera (El Sorbito)	Seville	422 Bif Utrera-Fuente Piedra	8.579	2	1	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	TRACK	CLOSED	1
ADIF	RENFE OPERADORA	0049/10	06/08/2010	Carmonita	Badajoz	510 Aljucén-Cáceres	24.420	1	0	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	TRACK	CLOSED	5
FEVE	FEVE	0050/10	07/09/2010	Zalla	Vizcaya	31 León-Bilbao	0.388	0	0	ACCIDENT	LEVEL CROSSINGS	PERSON	TRACK	CLOSED	3
ADIF	RENFE OPERADORA	0053/10	30/09/2010	Redondela	Pontevedra	810 Vigo-Monforte de Lemos	166.601	0	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	1
FEVE	FEVE	0056/10	16/10/2010	La Braña	Asturias	61 Gijón-Llaviana	1.057	0	0	ACCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0062/10	10/11/2010	Betanzos (Betanzos-Infesta)	A Coruña	800 A Coruña-León	524.468	0	0	ACCIDENT	DERAILMENT	TRAIN	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0063/10	11/11/2010	Benifaíó	Valencia	300 Madrid-Valencia	89.850	0	0	ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	5
ADIF	RENFE OPERADORA	0064/10	03/12/2010	Fuentes de Oñoro	Salamanca	120 Vilar Formoso-O Medina de'l Campo	124.632	1	0	ACCIDENT	LEVEL CROSSINGS	VEHICLE CAR	TRACK	CLOSED	1

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4.3. Analysis by type

4.3.1. Serious accidents

During 2010 only one serious accident was investigated, according to the definition laid down in Royal Decree 810/2007:

SERIOUS ACCIDENT	ADIF	TYPE	FILE N°	LINE	PROVINCE	K.P.
		COLLISION (OF TRAINS)	18/10	100 Madrid-Hendaya	Segovia	117.050

The accident, which took place on 26 March 2010 in the vicinity of Arévalo station, was caused when a Renfe Operadora freight train, stopped before the entry signal of the said station, was overtaken by another freight train, from the same rail company, which found the approach signal indicating line clear. As a result of the collision, the driver of the second train died. On the basis of the relevant investigation, the Commission made three recommendations.



Condition of trains involved (source: CIAF)

4.3.2. Accidents

4.3.2.1. Collision

During 2010 there was an investigation into an accident owing to a collision between a section of wagons and the stationed stock towards which it was being pushed, which caused the derailment of two wagons and the fatality of one of the workers who were working there.

ACCIDENT	ADIF	TYPE	FILE N°	LINE	PROVINCE	K.P.
		COLLISION (ROLLING STOCK)	20/10	100 Madrid-Valencia	Valencia	

4.3.2.2. Derailment

During 2010 eight accidents owing to derailment were investigated: six were produced on the network managed by Adif and the other two on that run by Feve.

The cause of all of them is attributable to the railway.

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		TYPE	FILE N°	LINE	PROVINCE	K.P.
ACCIDENT	ADIF	DERAILMENT	06/10	400 Alcázar de San Juan-Cádiz	Seville	568.250
			08/10	912 Las Matas-Pinar de las Rosas	Madrid	20.658
			26/10	910 Madrid Atocha Cercanías-Pinar de las Rozas	Madrid	5.114
			36/10	700 Casetas-Intermodal Abando Indalecio Prieto	Álava	230.862
			62/10	800 A Coruña-León	La Coruña	524.468
			63/10	300 Madrid-Valencia	Valencia	89.850
	FEVE		28/10	11 Ferrol-Oviedo	La Coruña	43.559
			38/10	11 Ferrol-Oviedo	Lugo	148.845

4.3.2.3. Level-crossing accidents

Level crossings, according to the *Ministerial Order of 2 August 2001, expanding Article 235 of the Regulations of the Basic Law on Inland Transport, concerning elimination and protection of level crossings*, are classified according to the following seven types:

CLASSIFICATION OF LEVEL CROSSINGS (Ministerial Order of 2 August 2001)	
Type of protection	Characteristics
Class A	Protected only by fixed signage
Class B	Protected by light and sound signals
Class C	Protected by automatic or interlocking half-barriers, double half-barriers or barriers
Class D	Protected by a system of safety notices
Class E	Protected by crossing keeper
Class F	Exclusively for pedestrians or pedestrians and animals
Class P	Private

On the General Interest Rail Network, as at 31 December 2010, the number of level crossings is given in the following table according to their type:

	Adif	%	Adif	%	Total	%
Class A	1,121	44.45	675	67.43	1,796	50.98
Class B	458	18.16	77	7.69	535	15.19
Class C	480	19.03	178	17.78	658	18.68
Class D	17	0.67	0	0.00	17	0.48
Class E	2	0.08	4	0.40	6	0.17
Class F	72	2.85	67	6.69	139	3.95
Class P	372	14.75	0	0.00	372	10.56
Total	2.522	100	1.001	100	3.523	100

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There were seven level-crossing accidents investigated in 2010: four on the network administered by Adif and three on the network managed by Feve.

		TYPE	TYPE OF PROTECTION	FILE N°	LINE	PROVINCE	K.P.
ACCIDENT	ADIF	LEVEL CROSSINGS	C	02/10	600 Valencia-San Vicente de Calders	Castellón	62.902
			B	47/10	422 Bif. Utrera-Fuente Piedra	Seville	8.579
			Temporary for works	49/10	510 Aljucén-Cáceres	Badajoz	24.420
			A	64/10	120 Vilar Formoso - Medina del Campo	Salamanca	124.632
			A	17/10	31 León-Bilbao	León	5.037
	44/10			21 Oviedo-Santander	Cantabria	489.795	
	FEVE		C	50/10	31 León-Bilbao	Vizcaya	0.388

Of the 7 level-crossing accidents, 6 were with road vehicles and one with pedestrians. Only one of these accidents is attributable to the railway (file 49/10), the remainder being caused by the behaviour of users.

These accidents had 9 victims (8 fatalities and one seriously injured), all users of the crossing, minus two of them who were passengers on the train involved in the 49/10 event. The majority of accidents occurred at crossings with Class A protection (42.86%) and the majority of victims (77.77%) crossed the level crossings as occupants of road vehicles.

Type of protection	Adif			Feve		Total by protection
	Vehicle	Pedestrian	Passenger	Vehicle	Pedestrian	
Class A	1			2		3
Class B	1					1
Class C	1				1	2
Temporary for works	1		2			3
Total victims	4	0	2	2	1	9
	6			3		

In the following following table, the victims have been grouped by age range and sex:

Type of protection	< 25 years		25-50 years		50-70 years		> 70 years	
	Male	Female	Male	Female	Male	Female	Male	Female
Class A	1			1	1			
Class B					1			
Class C							1	1
Temporary for works	1	1	1					
Total	2	1	1	1	2	0	1	1
%	33.33		22.22		22.22		22.22	

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The age range showing the highest accident rate is that of those under 25 (33.33%), while the other three age ranges show the same percentage (22.22%). As for classification by sex, two thirds of victims are male (66.67%).

It should also be pointed out that in five cases (71%) the path or road signs did not comply, to a greater or lesser extent, with that which is laid down in the MO of 2 August 2001 relating to protection and elimination of level crossings, it having been concluded that this is a deficiency and not the direct cause of the event.

4.3.2.4. Accidents to persons caused by rolling stock in motion

During 2010 four accidents caused by rolling stock striking persons were investigated, all taking place at stations, halts or sidings on the network administered by Adif.

Excluded from this classification are persons hit at level crossings (who are included under the type ‘Level-crossing accidents’), as well as suicides which, in any case, are not subject to investigation as they are not considered to be accidents.

		TYPE	FILE N°	LINE	PROVINCE	K.P.
ACCIDENT	ADIF	ACCIDENTS TO PERSONS CAUSED BY ROLLING STOCK	03/10	300 Madrid-Valencia	Madrid	13.860
			14/10	100 Madrid-Hendaya	Palencia	278.952
			30/10	200 Madrid-Barcelona	Barcelona	656.598
			31/10	100 Madrid-Hendaya	Álava	492.400

In all these events, the cause of the accident was the victims’ behaviour (not attributable to the railway). They produced 14 fatalities and 10 seriously injured.



View of the Platja de Castelldefels halt (source: CIAF)

Of these four accidents, we would draw your attention to the occurrence at the halt of Platja de Castelldefels (Barcelona), on the night of 23 June 2010, when, after alighting from another train, a crowd of users crossed the tracks with the intention of heading for the halt exit, and were struck by a train that did not have a prescribed stop at the halt. The halt is provided with an underpass. As a result, 12 people died and another 10 were seriously injured.

4.3.2.5. Fire

During 2010 no accidents caused by fire were investigated.

4.3.2.6. Other accidents

During 2010 no other type of accident was investigated.

4.3.3. Incidents

During 2010 seven incidents were investigated, all near collisions (six on the network administered by Adif and one on that run by Feve).

		TYPE	FILE N°	LINE	PROVINCE	K.P.
ACCIDENT	ADIF	NEAR COLLISION	16/10	700 Casetas-Intermodal Abando Indalecio Prieto	Logroño	76.396
			32/10	220 Lleida Pirineus-L'Hospitalet de Llobregat	Barcelona	361.100
			33/10	920 Móstoles El Soto-Parla	Madrid	20.655
			39/10	AV 80 Madrid Chamartín-Valladolid Campo Grande	Valladolid	168.867
			46/10	800 A Coruña-León	León	250.553
			53/10	810 Vigo-Monforte de Lemos	Pontevedra	166.601
	FEVE		56/10	11 Ferrol-Oviedo	Asturias	1.057

Of the 10 incidents notified, the CIAF decided to study all except three, in view of the fact that the initial conditions under which these seven events were produced could have triggered an accident or serious accident.

All the near collisions investigated were caused by signal overruns (authorised or unauthorised), and therefore their causes originate from the railway.

5. CAUSES OF INVESTIGATED EVENTS

The following table groups the causes of investigated events by classification of the event, rail network and type. In addition, it shows the victims (fatalities and seriously injured) attributable to each of the two causal classifications: railway or third parties.

ATTRIBUTED CAUSE	CLASSIFICATION	NETWORK	TYPE	CAUSE	TOTAL EVENTS	TOTAL VICTIMS (FATALITIES + INJURED)
RAILWAY	SERIOUS ACCIDENT	ADIF	Collision (of trains)	INFRASTRUCTURE FAILURE: Fixed signalling failure	1	1
	ACCIDENT	ADIF	Collision (rolling stock)	HUMAN ERROR: Non-compliance with regulations	1	1
			Derailment	INFRASTRUCTURE FAILURE: Deficient fastening of track	2	0
				INFRASTRUCTURE FAILURE: Mal function of gauge changer	1	0
				ROLLING STOCK FAILURE: Accidental slipping of a wheel	2	0
				ROLLING STOCK FAILURE: Loss of axle-box	1	0
			Level crossings	HUMAN ERROR: Non-compliance with regulations	1	3
			Accident to persons caused by rolling stock	HUMAN ERROR: Non-compliance with regulations	2	1
	INCIDENT	FEVE	Derailment	HUMAN ERROR: Non-compliance with regulations	2	0
			ADIF	Near collision	HUMAN ERROR: Non-compliance with regulations	6
FEVE	Near collision	HUMAN ERROR: Non-compliance with regulations	1	0		
TOTAL RAILWAY					20	6
THIRD PARTIES	ACCIDENT	ADIF	Level crossings	HUMAN ERROR: Victim avoids protection arrangements in operation	2	2
				HUMAN ERROR: Victim does not look out for arrival of train	1	1
			Accident to persons caused by rolling stock	HUMAN ERROR: Victim is in an unauthorised location	2	23
		FEVE	Level crossings	HUMAN ERROR: Victim avoids protection arrangements in operation	1	1
				HUMAN ERROR: Victim does not look out for arrival of train	2	2
TOTAL THIRD PARTIES					8	29
TOTAL GENERAL					28	35

Of the total of investigated events (accident and incident), the railway system is the origin of 71% of same (20 out of 28) but only 17% of the victims produced (fatalities and injured). Conversely, the remaining 29% of investigated events have causes attributable to third parties which produced 83% of victims.

With respect to causes originating from the railway (13 accidents and 7 incidents), almost two thirds (65%) of the events are caused by human error on the part of railway staff, and the remainder (35%) is due to infrastructure or rolling stock failures.

On the other hand, human error is present as a determining factor in 100% of investigated events attributable to third parties (8 accidents and no incidents). It is the victims' behaviour that produces 6 of the 7 level-crossing accidents and 2 of the 4 accidents with accidents to persons caused by rolling stock.

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6. COMPARATIVE ANALYSIS

The tables below set out the data for the total number of investigated events (accidents and incidents), the victims produced by same (fatalities + seriously injured) and recommendations made in each of the final reports to which the investigation gave rise and which, since 2006, the Ministry of Public Works has carried out, in accordance with the provision in the Rail Sector Act and Regulations (January 2005) and, subsequently, in the Traffic Safety Regulations (September 2007).

INVESTIGATED EVENTS 2006-2010

YEAR	TRILOGY REC	2006			2007			2008			2009			2010			TOTAL GENERAL
		ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	
SERIOUS ACCIDENT	Collision			0			0	2		2			0	1		1	3
ACCIDENT	Collision	2		2			0		1	1	4	1	5	1		1	9
	Derailment	1		1		1	1	2		2	3	1	4	6	2	8	16
	Level crossings	14		14	16	4	20	14		14	12	4	16	4	3	7	71
	Personal injury	36	1	37	43	3	46	33	2	35	8		8	4		4	130
INCIDENT	Near collision			0			0	2	1	3	7	2	9	6	1	7	19
	Broken axle			0			0			0		1	1			0	1
Total		53	1	54	59	8	67	53	4	57	34	9	43	2	6	28	249

VICTIMS OF INVESTIGATED EVENTS 2006-2010

YEAR	TRILOGY REC	FATALITIES SERIOUSLY INJURED	2006			2007			2008			2009			2010			TOTAL GENERAL	
			ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL		
SERIOUS ACCIDENT	Collision	VM			0			0	2		2			0	1		1	3	
		HG			0			0			0			0			0	0	
ACCIDENT	Collision	VM	2		2			0			0			0	1		1	3	
		HG			0			0			0			0			0	0	
	Derailment	VM	7		7			0			0			0			0	7	
		HG	6		6			0			0			0			0	6	
	Level crossings	VM	16		16	19	4	23	15		15	12	4	16	5	3	8	78	
		HG			0	3		3				1	1	1	1		1	5	
	Personal injury	VM	38	1	39	46	3	49	33	2	33	8		8	14		14	145	
		HG	2		2			0	1		1			0	10		10	13	
Total				71	1	72	68	7	75	51	2	53	20	5	25	32	3	35	260

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RECOMMENDATIONS 2006-2010

	YEAR	2006			2007			2008			2009			2010			TOTAL GENERAL
	TRILOGY REC	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	
SERIOUS ACCIDENT	Collision			0			0	1		1			0	3		3	4
ACCIDENT	Collision	2		2			0		1	1	6	1	7	1		1	11
	Derailment	4		4		8	8	5		5	4	1	5	18	3	21	43
	Level crossings	14		14	26	12	35	7		7	2		2	7	6	13	74
	Personal injury			0			0			0	5		5	4		4	9
INCIDENT	Near collision			0			0	8		8	14	4	18	1	2	3	29
	Broken axle			0			0			0		3	3			0	3
	Total	20	0	20	26	20	46	21	1	22	31	9	40	34	11	45	173

As can be seen in the tables above, the number of investigated events in 2010 was lower, even though four preliminary examinations (or background studies) were carried out in addition, which have not been accounted for. This decrease is due to the substantial reduction in the number of level-crossing accidents and accidents to persons (mainly striking of persons on the open line and at stations) investigated because, since the victims' behaviour and not the railway system was the cause of same, it was considered that there were no lessons to be learnt for improvement of safety in this mode of transport.

The number of victims has not reduced in the same proportion as the accidents, owing to the high number of fatalities and injured at Platja de Castelldefels.

With regard to the recommendations, although there were fewer investigations carried out, their number remained the same. There was a substantial increase in those arising from the investigation of derailments and hits at level crossings, and a decrease in those relating to near collisions, the latter being due to the fact that remedial measures had already been adopted by those responsible based on recommendations made previously.

7.1. Reports on 2010 accidents and incidents and recommendations

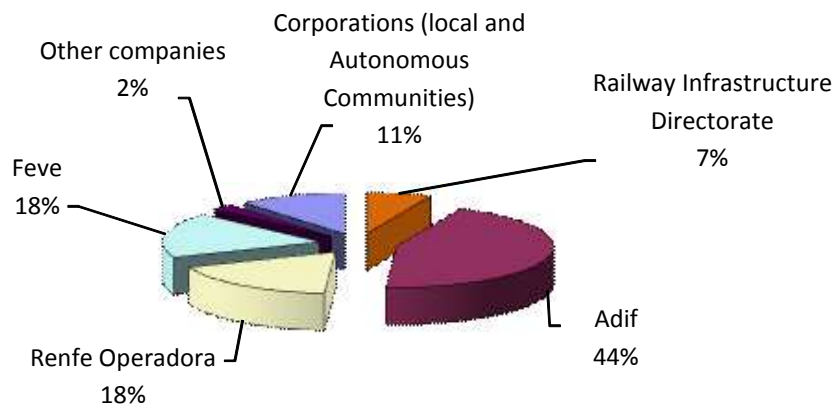
The investigation of rail accidents and incidents is justified by the contribution that it may make to the improvement of rail safety, by reducing the risks that may cause accidents and incidents in future, by way of conclusions and, where appropriate, safety recommendations that the Commission makes public in the final report.

This final report is forwarded to the National Safety Authority (Railway Infrastructure Directorate, DGIF) and the European Railway Agency (ERA) in addition to the bodies affected.

Of the 28 investigations launched concerning events occurring on the RFIG in 2010, on publication of this report, all were completed and in 20 of them the published final report contained recommendations.

In total, the Commission made 45 recommendations, which gives rise to an average of 1.6 recommendations per investigated event, significantly higher than that of previous years.

The graph shows the distribution of recommendations per final recipient. Almost half of the recommendations were directed at Adif, followed by Renfe Operadora and Feve.



Below is a summary with the basic data of all investigations carried out and recommendations made during 2010.

File	Date	Line	Administrator	Operator	Type of event
002/10	15/01/2010	600 Valencia-San-Vicente de Calders	Adif	Renfe Operadora	Level crossings
Long-distance passenger train 264 hit a three-wheeler van on the type C level crossing located at K.P. 62+902 at Vila-real station (Castellón). As a result of the impact and subsequent turning over of the vehicle, its sole occupant died.					
The accident arose from the crossing of the vehicle, occupied by the victim, through the level crossing when the half-barriers were lowered and the signals were indicating the arrival of train 264.					
Number of recommendations			Final recipient of recommendations		
0					
02/10-0 There were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
003/10	15/01/2010	600 Madrid-Valencia	Adif	Renfe Operadora	Personal injury
Medium-distance passenger train 17000 hit a person crossing from right to left (as seen from the direction of travel of the train) across track 2 of Getafe Industrial station (Madrid). As a result of the hit, the victim died in the act.					
The accident arose when the victim crossed the track via an unauthorised location for crossing at the time when train 17000 was moving through the same point.					
Number of recommendations			Final recipient of recommendations		
0					
03/10-0 There were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
006/10	10/01/2010	400 Alcázar de San Juan-Cádiz	Adif	Renfe Operadora	Derailment
There was a derailment of passenger train 112, at K.P. 568+250, 4.4 km from the Majorabique gauge changer, at the level of Bif. de San Bernardo, a little before the entrance to Seville Santa Justa station (Córdoba side).					
The derailment occurred owing to failure in the gauge-changing process, the left wheel of the first axle of the tail traction unit not remaining within the required track gauge. This failure was, possibly, produced by the accumulation of icy snow in the track-changing mechanism of the affected bogie. As an underlying cause, there was non-activation of the sagging clamp lock detection system.					
Number of recommendations			Final recipient of recommendations		
5			2, 3 and 4: Adif 1 and 5: Adif and Renfe Operadora		
<p>06/10-1 Study and update the passing procedure for the changers, including the latest modifications, checking that the functions of installation workers and the staff accompanying the train are clearly defined in cases of extraordinary circumstances (for example, presence of snow or ice).</p> <p>06/10-2 Sagging clamp lock detection system permanently activated, with indication of energy shortfalls. The system starter and disconnect interruptors will be placed under seal.</p> <p>06/10-3 Duplicate the non-interlocked clamp lock detection system, also improving protection of the microinterruptors to avoid sporadic activation that may activate this system and which does not relate to actual incidents.</p> <p>06/10-4 Study the possibility of setting up an indicating system for the driver in order that, in the event of a problem with the changing process, the driver may stop the train.</p> <p>06/10-5 Study the possibility of installing a system warning of non-movement of the wheel, owing to rupture of the crystal pneumatic line or due to the mechanical pedal, transmitting a brake warning to the train.</p>					

File	Date	Line	Administrator	Operator	Type of event
008/10	11/02/2010	912 Las Matas-Pinar de Las Rozas	Adif	Renfe Operadora	Derailment
The derailment of passenger train 27239 was produced, at K.P. 20+658 on the line, at Pinar de Las Rozas station (Madrid) at the level of points switch Nº 6.					
The accident arose from technical failure in the track installations, given the deficient fastening of the connecting rail of siding Nº 6, as well as the value of the track gauge in that area, which was higher than the maximum permitted.					
Number of recommendations			Final recipient of recommendations		
2			Adif		
<p>08/10-1 Analyse the viability of shortening the time intervals between maintenance of elements of the infrastructure similar to those involved in this accident; that is to say, those subjected to strong forces or of the same type.</p> <p>08/10-2 Analyse the viability of increasing inspections on foot of elements of the infrastructure with conditions similar to those of Pinar de Las Rozas station.</p>					

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File	Date	Line	Administrator	Operator	Type of event
0014/10	05/03/2010	100 Madrid-Hendaya	Adif	Renfe-Operadora	Personal injury
Passenger train 751, coming from Madrid and heading for Ferrol, hit a worker from a company subcontracted to Adif who was carrying out track works in Dueñas station (Palencia).					
The accident was caused when the worker entered the track clearance envelope as train 751 was passing, without obtaining authorisation from the works manager (authorised employee of Adif).					
Number of recommendations			Final recipient of recommendations		
2			ADIF		
14/10-1 Insist on training activities aimed at employees of companies who take part in track works, in which the importance of strictly following the chain of command is made clear and the importance of carrying out orders precisely if working on the track (or in its vicinity) where there is traffic at the same time as the works.					
14/10-2 Implementation of inspections intended to neutralise non-compliance with rules laid down for implementation of works.					

File	Date	Line	Administrator	Operator	Type of event
0016/10	10/03/2010	700 Casetas-Intermodal Abando Indalecio Prieto	Adif	Renfe-Operadora	Near collision
At Logroño station (Bilbao side), there was a near collision between long-distance train 933 and freight train 54654 when the former incorrectly overran entry signal S1/4 which was indicating a stop signal.					
The incident arose from the wrongful overrun by train 933 of signal S1/4 at Logroño station, which was indicating a stop (red) signal, through non-compliance with orders given by the signals to the crew on the train.					
Number of recommendations			Final recipient of recommendations		
0			0		
16/10-0 There were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
0017/10	11/03/2010	31 León-Bilbao	Feve	Feve	Level crossings
Local passenger train 7403 hit a car that went onto the type A level crossing, located at K.P. 5+037, between the halts of La Raya and Villaquilambre (León). As a result of the hit, the driver, who was the sole occupant of the vehicle, died.					
The accident arose from entry to the track clearance envelope by the road vehicle which crossed over the level crossing when train 7403 was passing.					
Number of recommendations			Final recipient of recommendations		
2			1: Municipality, Villaquilambre 2: Feve		
File	Date	Line	Administrator	Operator	Type of event
17/10-1 Adapt the road signals of the level crossing in accordance with the Ministerial Order of 2 August 2001, paying special attention to the continuous transverse mark indicating the point where the vehicle should stop (M- 4.1)					
17/10-2 Adapt the conditions of the level crossing to the provision in the Ministerial Order of 2 August 2001. Changing the type of protection from A to B, modifying the actual visibility distances in accordance with the speed established on the track section, or reducing the speed of the section by adapting it to the features of the level crossing.					

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File	Date	Line	Administrator	Operator	Type of event
0018/10	26/03/2010	100 Madrid-Henday	Adif	Renfe Operadora	Collision (Trains)
<p>At K.P. 172+050, on track 2, in the vicinity of Arévalo station (Ávila), a collision occurred due to overtaking between freight trains 58242 and 58244, when the former was stopped before entry signal E2, indicating a stop signal, and the latter found approach signal 1734 indicating line clear.</p> <p>The accident arose from a technical failure in the safety installations, specifically in the fixed signals, caused by changes in the interlocking of Arévalo station for carrying out tests. These changes comprised the installation of new cards and software for the future commissioning of an automatic block signal (ABS) on the route. The collision through overtaking was caused when approach signal 1734 indicated line clear, the subsequent circuit being occupied and entry signal E2 indicating a stop signal.</p> <p><u>Contributory causes</u></p> <p>There is a series of circumstances surrounding this accident:</p> <ul style="list-style-type: none"> • Failure of complete interruption of traffic during the works or, failing this, the establishment of measures that would have guaranteed the safety of same, such as: <ul style="list-style-type: none"> • Establishing an alternative block. • Action concerning the affected signals, so as to prevent indications that authorise movement (green and yellow). • Non-verification in situ of the consistency of the state of the signals with respect to the instructions governing the works. • Incorrect assessment of risk involved in carrying out those works. 					
Number of recommendations			Final recipient of recommendations		
3			1-2 Adif 3 UTE Dimetronic-Thales		
<p>18/10-1 By carrying out work on interlocks or blocking systems, a system of analysis and assessment of the installing company's safety operations will be established, in accordance with standard UNE-EN 50126 and the project safety plan and its additional protocols. (Safety case of the installation).</p> <p>18/10-2 When implementation of these works may affect the operation of the safety installations that they regulate (signals, markers, track equipment, etc.), the following measures should be taken:</p> <ul style="list-style-type: none"> • Interruption of traffic or, failing this, establishment of an alternative blocking system that guarantees safety of same. • Once the works have been completed, and before allowing normal traffic to resume, there will be onsite checks that all safety installations (signals, markers, track equipment, etc.) comply with the provisions. • These terms shall be included in the corresponding instructions, specifying: <ul style="list-style-type: none"> - Activities to be carried out, those responsible for same and the necessary safety conditions. - Periods for cutting traffic during tests. - Tests (conformity) to be carried out in temporary situations to which the period of loss of interlocking gives rise, to make them compatible with the traffic. <p>All the above will result from documented risk analysis to be carried out jointly with the installing company.</p> <p>18/10-3 There must be a review of the processes of the company's Safety/Quality Management System relating to safety installations, both new and as amendments to those in existence, and in cases of maintaining rail traffic, with the aim of avoiding situations similar to those of the event.</p> <p>In these cases the functions and responsibilities of the company's head of commissioning, as the expert on the technical risks arising from these situations, must be clarified.</p> <p>The company's safety teams must ensure that activities for verification/validation of systems or subsystems to be installed, or modification of those existing, are carried out effectively. In addition, this safety team shall approve onsite activities prior to commissioning.</p> <p>All the above must be documented as evidence (safety case) before authorising commissioning of the installation, irrespective of whether it is new or a modification of an existing installation. All this will be specified individually for the actual project in hand.</p>					

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File	Date	Line	Administrator	Operator	Type of event
0020/10	08/04/2010	300 Madrid-Valencia	Adif	Renfe-Operadora	Collision (rolling stock)
While carrying out manoeuvres at the Silla container terminal (Valencia), the collision occurred between a section of wagons and the stationed rolling stock towards which it was being pushed. This impact caused the death of a worker, who was found between the buffers of the stationed rolling stock, and the derailment of 2 wagons.					
The collision and subsequent derailment was caused by carrying out the manoeuvre without those directly intervening complying with Articles 615 (points 4 and 8) and 605 (point 3) of the General Traffic Regulations (R.G.C.) The running over of the deceased employee arose because the latter was located in an inappropriate place at the time of the collision (POP/20, point 7).					
Number of recommendations			Final recipient of recommendations		
1			Adif		
20/10-1 Insist, by way of training activities aimed at both the drivers and the manoeuvring crew, on strict compliance with the rules laid down in the R.G.C. and Adif's operational prevention procedure POP/20.					

File	Date	Line	Administrator	Operator	Type of event
0026/10	23/05/2010	910 Madrid-Atocha Cernanías-Pinar de las Rozas	Adif	Renfe-Operadora	Derailment
At K.P. 5+114, between Pozuelo and Príncipe Pío stations (Madrid), there was the derailment of freight train 95053 consisting of a locomotive, owned by Renfe Operadora, and 22 wagons, belonging to the Ministry of Defence. The first bogie of the flat car occupying the twelfth position, as seen from the direction of travel of the train, was derailed.					
The accident arose from the accidental slipping of the right wheel of the first axle of the first bogie of the twelfth flat car of the train section, probably owing to the poor pressing on of the said wheel without being able to determine the cause of same.					
Number of recommendations			Final recipient of recommendations		
1			Adif		
26/10-1 Carry out an audit, external to Siderúrgica Requena, S.A., of aspects relating to: 1.Documentation applied to pressing on of wheels and quality control. 2.Check the condition, control and calibration of mechanised means, pressing on and measurement systems.					

File	Date	Line	Administrator	Operator	Type of event
0028/10	14/06/2010	11 Ferrol-Oviedo	Feve	Feve	Derailment
Goods train FR 901 derailed on the open line at a curve to the right as seen from the direction of travel of the train, at K.P. 43+559, between Ponte Mera and Santa María de Mera (A Coruña) stations, on the route between Cerdido and Ortigueira.					
The accident arose when train FR 901 moved with excessive speed. As an underlying factor, it is pointed out that the speed of the section in the area of the accident was incorrectly established.					
Number of recommendations			Final recipient of recommendations		
1			Feve		
28/10-1 Establish a survey programme with periodic readings of the safety recorders in order to ascertain whether the drivers' behaviour complies with the regulations.					

File	Date	Line	Administrator	Operator	Type of event
0030/10	23/06/2010	200 Madrid-Barcelona	Adif	Renfe-Operadora	Personal injury
<p>At the Platja de Castelldefels halt (K.P. 656+598) - Barcelona, long-distance passenger train Alaris 1202, without an established stop at that halt and travelling along track 2, struck various persons who were crossing the track from left to right as seen from the direction of travel of the train, with the result of 12 fatalities, 10 seriously injured and 7 slightly injured.</p> <p>The circumstances were such that, moments beforehand, local train 28391, travelling in the opposite direction on track 1, had made a commercial stop at that halt, with a large number of people getting off the train.</p> <p>The accident arose from entry to the track clearance envelope by the victims, who were crossing at an unauthorised location, and without noticing the arrival of train 1202.</p>					
Number of recommendations			Final recipient of recommendations		
0					
<p>30/10-0 There were no recommendations. (*)</p> <p>(*)-The Railway Infrastructure Directorate, as the National Rail Safety Authority, was sent the information on safety arrangements in stations obtained from other European countries, in order to analyse the feasibility of introducing at especially controversial RFIG stations some of the safety measures existing in those countries or other similar actions.</p>					

File	Date	Line	Administrator	Operator	Type of event
0031/10	26/06/2010	100 Madrid-Hendaya	Adif	Renfe-Operadora	Personal injury
<p>At Vitoria – Gasteiz station (K.P. 492+400), long-distance passenger train 407 arrived at the station on track 1 in order to make a commercial stop. The driver received the signal that operations had been completed by the crew member (inspector) although the passengers had not all boarded the train and, since the exit signal showed line clear, the driver started to move off, causing one person to fall onto the platform, who then fell onto the others who should have boarded the train, resulting in five slightly injured persons.</p> <p>The accident arose from the crew member giving the signal that operations had been completed, despite the fact that the passengers had not finished alighting from and boarding the train.</p>					
Number of recommendations			Final recipient of recommendations		
2			Renfe Operadora		
<p>31/10-1 Insist on strict compliance by crew members on board the train with the ‘ELIPSOS train-hotel procedure. Activation procedure in the internal communication system of the train, closure of external doors and communication of completed operations.’</p> <p>31/10-2 Insist on compliance, by crew members, with Article 313 of the General Traffic Regulations.</p>					

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File	Date	Line	Administrator	Operator	Type of event
0032/10	29/06/2010	2210 Lleida Pirineus- L'Hospitalet de Llobregat	Adif	Renfe-Operadora	Near collision
At Sant Andreu Arenal station (Barcelona), there was a near collision between the manoeuvring of empty stock (originating from local train 25122) and local train 28708, when the former incorrectly overran backing signal R3 which was indicating a stop signal.					
The incident arose from the wrongful overrun owing to manoeuvring of empty stock (originating from local train 25122) of backing signal R3, indicating a stop, through non-compliance with orders given by the signals to the driving crew.					
Number of recommendations			Final recipient of recommendations		
0					
32/10-0 Since the measures adopted are considered adequate, there were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
0033/10	05/07/2010	920 Móstoles El Soto- Paria	Adif	Renfe-Operadora	Near collision
At Móstoles – El Soto station (Madrid), there was a near collision between the manoeuvring of empty stock (originating from local train 27753) and local train 19819, when the former incorrectly overran exit signal 1721 which was indicating a stop signal. There were no victims or material damage.					
The incident arose from the wrongful overrun owing to manoeuvring of empty stock (originating from local train 27753) of exit signal 1721 at Móstoles – El Soto station, indicating a stop signal (red), through non-compliance with the orders given by the signals to the train crew.					
Number of recommendations			Final recipient of recommendations		
0					
33/10-0 Since the measures adopted are considered adequate, there were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
0036/10	10/07/2010	700 Casetas-Intermodal Abando Indalecio Prieto	Adif	Renfe-Operadora	Derailment
At K.P. 230+862, between Ugao- Miraballes and Llodio (Álava) stations, there was a derailment of long-distance passenger train 436. The third coach (axles Nº 11 and Nº 12) of the train section, as seen from the direction of travel of the train, was derailed. There were no injuries as a result of the derailment.					
The accident arose from the technical failure of the rolling stock, on losing the distance between the internal faces of the wheels, due to the displacement of the left wheel of the first axle of the second bogie of the third coach of train 436. The displacement was caused by the complete section break of the sliding bush of said wheel.					
Number of recommendations			Final recipient of recommendations		
3			Renfe Operadora		
36/10-1 Continue with inspections, every 30,000 km, of the bushes without replacement, in accordance with established specifications and regulations.					
36-10-2 Continue with replacements of original bush with that of new design, in accordance with established plan. Accelerate same if any problem is detected in the inspections of recommendation 36/10-1.					
36-10-3 Establish a specific monitoring plan for new bushes until final validation. From then on, normal maintenance as specified will take place.					

File	Date	Line	Administrator	Operator	Type of event
0038/10	14/07/2010	11 Ferrol-Oviedo	Feve	Feve	Derailment
Goods train 9121 derailed on the open line at a curve to the right, as seen from the direction of travel of the train, at K.P. 148+845, on the route between Ribadeo and Vegadeo (Lugo) stations.					
The accident was caused by train 9121 travelling at excessive speed. As an underlying factor, it is pointed out that the speed of the section in the area of the accident was incorrectly established.					
Number of recommendations			Final recipient of recommendations		
2			Feve		
<p>38/10-1 Establish a survey programme with periodic readings of the safety recorders in order to ascertain whether the drivers' behaviour complies with the regulations.</p> <p>38/10-2 Carry out an inspection of the Ferrol-Pravia section by monitoring the line, ensuring that the parameters comply with the Feve standard NFI track 002 'geometric parameters'. Check that speeds on the sections and permanent speed limits comply with the monitored parameters.</p>					

File	Date	Line	Administrator	Operator	Type of event
0039/10	16/07/2010	80 Madrid Chamartin-Valladolid Campo Grande	Adif	Rente Operadora	Derailment
At the Río Duero (Valladolid) unit, there was a near collision between long-distance passenger trains 4141 and 8168, when the former incorrectly overran entry signal E1, which was indicating a stop signal.					
The incident arose from the wrongful overrun, by train 4141, of entry signal E1, indicating a stop signal, through non-compliance with the orders given by the signals to the driving crew.					
Number of recommendations			Final recipient of recommendations		
0			Feve		
39/10-0 Since the measures adopted are considered adequate, there were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
0044/10	09/08/2010	21 Oviedo-Santander	Feve	Feve	Level crossings
Regular passenger train 6502 hit an agricultural vehicle that went onto the Class A level crossing at K.P. 489+795, between Casar de Periedo and Virgen de la Peña (Cantabria) stations. As a result of the hit, the sole occupant of the vehicle died.					
The accident arose from entry to the track clearance envelope, by the agricultural vehicle, which crossed the level crossing when train 6502 was passing.					
Number of recommendations			Final recipient of recommendations		
1			Municipality Cabezuón de la Sal		
44/10-1 Adapt signals of the level crossing passage in accordance with the provision in the Ministerial Order of 2 August 2001.					

File	Date	Line	Administrator	Operator	Type of event
0046/10	17/08/2010	800 A Coruña-León	Adif	Renfe Operadora	Near collision
At Ponferrada (León) station, located at PK 250+950, there was a near collision between freight trains 82214 and LK289, when the former incorrectly overran exit signal S2/4, located at PK 250+553, which was indicating a stop signal.					
The incident arose from the wrongful overrun by freight train 82214 of exit signal S2/4, indicating a stop signal, through non-compliance with the orders given by the signals to the driving crew.					
Number of recommendations			Final recipient of recommendations		
0					
46/10-0 Since the measures adopted are adequate, there were no recommendations.					

File	Date	Line	Administrator	Operator	Type of event
0047/10	18/08/2010	422 Bif. Utrera-Fuente Piedra	Adif	Renfe Operadora	Level crossings
Medium-distance passenger train 13926 hit a road vehicle on the Class B level crossing, located at K.P. 8+579, between Utrera and El Sorbito stations, in the province of Seville. As a result of the hit, the driver, who was the sole occupant of the road vehicle, died.					
The accident arose from entry to the track clearance envelope by the road vehicle, which burst onto the level crossing, with the protection devices (sound and light indicators) activated, indicating the imminent arrival of train 13926.					
Number of recommendations			Final recipient of recommendations		
1			Andalucía Autonomous Community		
47/10-0 Supplement the vertical signals of the passages giving access to the level crossing in order to make them comply with the provision in the Order of 2 August 2001, relating to removal and protection of level crossings.					

File	Date	Line	Administrator	Operator	Type of event
0049/10	06/09/2010	510 Aljucén-Cáceres	Adif	Renfe-Operadora	Level crossings
<p>Passenger train 17015 hit a dumper truck that entered the temporary level crossing for works, located at PK 24+420, between Aldea del Cano and Aljucén (Badajoz) stations. After the impact, the truck remained mounted on its front axle between the second and third coach of the train which, in its turn, was completely derailed. As a result of the accident, a passenger and the truck driver, sole occupant of the vehicle, died. In addition, the train driver and another passenger were seriously injured.</p>					
<p>The accident arose from entry to the track clearance envelope by the dumper truck which crossed the level crossing when train 17015 was passing, without the level crossing chains being drawn across.</p>					
Number of recommendations			Final recipient of recommendations		
5			2: Railways Infrastructure Directorate 1, 3, 4 and 5: Adif		
<p>49/10-1 When authorisation is requested from DGIF to establish a temporary crossing for works, risk analysis for the crossing will be attached, depending on the characteristics and requirements of the work, nature of the traffic and management of the line on which the crossing is intended to be located.</p> <p>49/10-2 The authorisation for establishing a temporary level crossing for works must contain the necessary protection measures depending on the particular nature of the work and the line affected, based on risk analysis submitted by the infrastructure administrator in their authorisation request. The protection measures must be adjusted to any one of the protection classes laid down in the Order of 2 August 2001 relating to level crossings.</p> <p>49-10-3 Introduce the necessary technical means to record conversations between traffic managers and the safety pilots in charge of temporary level crossings for works.</p> <p>49-10-4 Reminder of the obligation to carry out tests for consumption of alcohol and drugs on all those who may have been involved in an accident.</p> <p>49-10-5 Include in safety plans systematic visits to temporary crossings for works by safety staff to check correct application of corresponding instructions.</p>					

File	Date	Line	Administrator	Operator	Type of event
0050/10	07/09/2010	31 Leñon-Bilbao	Feve	Feve	Level crossings
<p>Regular passenger train 8939 fatally hit a woman who went onto the Class C level crossing located at K.P. 0+388, between Aranguren and Zalla (Vizcaya) stations, when the crossing protection devices were in operation.</p>					
<p>The accident arose from entry to the track clearance envelope by the victim who crossed the level crossing when train 8939 was passing and the protection devices were in operation.</p>					
Number of recommendations			Final recipient of recommendations		
3			1: Zalla Municipality 2 and 3: Feve		
<p>50/10-1 Adapt signals on passage of level crossing to the provisions in the Ministerial Order of 2 August 2001.</p> <p>50/10-2 Reinforce crossing signage in the area in which it converges with the exit from the halt platform.</p> <p>50/10-3 Eliminate the half-barrier which is unnecessary, given the direction of road traffic.</p>					

File	Date	Line	Administrator	Operator	Type of event
0053/10	30/09/2010	810 Vigo-monforte de Lemos	Adif	Renfe-Operadora	Near collision
At Redondela (Pontevedra) station there was a near collision between long-distance passenger trains 620 and 651, when the former incorrectly overran exit signal 1S/I located at PK 166+601, which was indicating a stop signal.					
The incident arose from the wrongful overrun by passenger train 620 of exit signal 1S/I, indicating a stop signal, through non-compliance with the orders given by the signals to the train crew.					
Number of recommendations			Final recipient of recommendations		
1			Adif		
53/10-1 Study the viability of installing an exit-indicating signal at signal 1S/I at Redondela station, given the special conditions, it being located on a curve and with the transition from double track to two single tracks, extending the analysis to the remaining exit signals of the said station.					

File	Date	Line	Administrator	Operator	Type of event
0056/10	19/10/2010	61 Gijón-Laviana	Feve	Feve	Level crossings
Between Gijón and Sotiello (Asturias) stations, there was a near collision between local passenger trains 4519 and 5418 when train 5418 was authorised to pass through the exit signal (S1/1) of Sotiello station, and subsequently train 4519 was authorised to pass through the exit signal (S2/P) of Gijón station towards the section occupied on a single track by train 5418, although train 4519 did not go on to pass through the abovementioned signal S2/P.					
The near collision arose from the staff responsible for traffic authorising train 4519 to pass through signal S2/P towards a section occupied by train 5418.					
Number of recommendations			Final recipient of recommendations		
2			Feve		
56/10-1 Insist on rigorous application of Feve Train Traffic Regulations by staff responsible for traffic, mainly in degraded situations due to damage to the safety systems controlling movement of trains.					
56/10-2 Training programmes and retraining of staff must include traffic drills in degraded situations.					

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File	Date	Line	Administrator	Operator	Type of event
0062/10	10/11/2010	800 A Coruña-León	Adif	Renfe-Operadora	Derailment
There was the derailment of five axles of the locomotive that was hauling freight train 81729 (part of its load, consisting of dangerous goods), at K.P. 524+416, at Betanzos-Infesta (A Coruña) station, at the level of the crossing of points switch 9.					
The accident arose from technical failure in the track installations. As a result of the deficient fastening of the connecting rail of siding 9, the track opened as the locomotive passed through with the subsequent sagging of the first axles of same.					
Number of recommendations			Final recipient of recommendations		
2			Adif		
62/10-1 In the periodic inspections of the infrastructure, there should be more emphasis on the condition of fastenings.					
62/10-2 Insist on the need for periodic and adequate maintenance of all elements of the infrastructure.					

File	Date	Line	Administrator	Operator	Type of event
0063/10	11/11/2010	300 Madrid-Valencia	Adif	Renfe Operadora	Derailment
At PK 89+850 between Algemesi and Benifaió stations, there was the derailment of freight train COX26. There were no injuries as a result of the derailment.					
The accident arose from the technical failure of the rolling stock. The derailment of the right wheel of axle Nº28 was caused on losing contact with the track owing to tipping of the eleventh wagon chassis, as a result of the loss of the left axle-box of axle Nº 27, caused by the mechanical failure of some element of the bearing.					
Number of recommendations			Final recipient of recommendations		
5			1 y 5: Adif 2y 3: Renfe Operadora 4: Railway Infrastructure Directorate		
63/10-1 Study the possibility of introducing automatisms in equipment for detecting hot axles for controlling variations in risk temperatures on passing through same, establishing correlated and computerised chains, in real time, for monitoring between consecutive detectors on the same line.					
63/10-2 Carry out a consistency study of NTMs and MMCs that include maintenance of axle-boxes and bearings, modifying them where necessary.					
63/10-3 Carry out audits to check compliance of NTMs that affect the preventive maintenance of axle-boxes and bearings 800.302.01 and 800.302.00.					
63/10-4 Study the suitability of making amendments to existing regulations on management of alarms produced in equipment detecting hot axles.					
63/10-5 Insist on the need to carry out tests for blood alcohol levels and drug addiction in all staff involved in the accident.					

File	Date	Line	Administrator	Operator	Type of event
0064/10	03/12/2010	120 Vilar Formoso Medina del Campo	Adif	Renfe-Operadora	Level crossings
Goods train 58727 hit a van with a trailer that entered the Class A level crossing located at K.P. 122+116, between Espeja and Fuentes de Oñoro (Salamanca) stations. As a result of the hit, the sole occupant of the vehicle died.					
The accident arose from entry to the clearance envelope of the track by the road vehicle which crossed the level crossing when train 58727 was passing.					
Number of recommendations			Final recipient of recommendations		
1			Municipality: Fuentes de Oñoro		
64/10-1 Adapt signals on passage of level crossing in accordance with the provision in the Ministerial Order of 2 August 2001.					

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7.2. Measures adopted as a result of the recommendations made

Royal Decree 810/2007 of 22 June approving the Regulation concerning traffic safety on the General Interest Rail Network states in Article 25 that the CIAF's annual report shall include, in addition to investigations carried out and recommendations published in the previous year, measures which, where appropriate, have been adopted in accordance with the recommendations made previously.

This section therefore includes information received at the CIAF relating to measures that, concerning recommendations made previously, were adopted by the final recipient before 30 September 2011, although other measures were adopted without formal notice to the CIAF up to that date.

This information was provided by the DGIF which, as the National Rail Safety Authority, is responsible for monitoring the status of recommendations and keeping the CIAF informed.

Accordingly, the following are the adopted measures relating to recommendations set out in the separate investigated events, identified by their file number, which were adopted between publication of the previous report (September 2010) and the present report.

File	CIAF recommendations	Measures adopted by final recipient
0063/09	63/09-1 Insist on the application of existing safety management measures, emphasising the training aspect in strict compliance with the rules laid down in the General Traffic Regulations, the influence of psychological processes on driving and verification of the aptitude of the driving crew.	<p>Renfe Operadora: It commissioned various projects aimed at improving human error risk management:</p> <ol style="list-style-type: none"> 1. An office has been set up for the management of human error with a mission to identify the causes of human error in drivers and to apply appropriate preventive measures. 2. In May 2010 it commenced its 'knowledge management community' activity made up of trainers and safety managers, the purpose of which is to improve training given to drivers. 3. These are in the introductory phase, each training programme being focussed on driver reliability by way of analysis of the most frequent causes of overrunning signals and the development of more appropriate attitudes to prevent human error. These programmes were developed with the support of university researchers, experts in the field of human error management.

File	CIAF recommendations	Measures adopted by final recipient
0006/10	06/10-1 Study and update the procedure for passing through changers, including the latest modifications made, ensuring that the functions of installation workers and accompanying train crew are clearly defined in cases of extraordinary circumstances (for example, presence of snow or ice).	<p>Renfe Operadora: A new procedure for passing through changers was implemented which clearly defined the functions of all workers, under both ordinary circumstances and extraordinary circumstances, as are cases of presence of snow or ice.</p>
	06/10-5 Study the possibility of installing a system warning of the non-movement of the wheel, owing to rupture of the crystal pneumatic line or due to the mechanical pedal, transmitting a brake warning to the train.	<p>Renfe Operadora: Together with Talgo and Adif, it studied a warning system from the rupture of a crystal pneumatic detector, in the case of non-movement of the wheel. Subsequently a prototype was designed and built, and underwent various static trials and also a real-time test using a train on the Fuencarral changer, having obtained satisfactory results in the tests.</p>

File	CIAF recommendations	Measures adopted by final recipient
0026/10	<p>26/10-1 Carry out audit, external to Siderúrgica Requena, S.A., of aspects relating to:</p> <ol style="list-style-type: none"> 1. Documentation applied to pressing on of wheels and quality control. 2. Check the condition, control and calibration of mechanised means, pressing on and measurement systems. 	<p>Adif:</p> <p>An audit was carried out by the Traffic Safety Directorate at Siderúrgica Requena, S.A. of the aspects that, following current regulations, are laid down for processes to check railway rolling stock.</p>

File	CIAF recommendations	Measures adopted by final recipient
0030/10	<p>30-10-0 There were no recommendations.(*)</p> <p>(*).- The Railway Infrastructure Directorate, as the National Rail Safety Authority, was sent the information on safety arrangements at stations obtained from other European countries, in order to analyse the feasibility of introducing in especially controversial RFIG stations some of the safety measures existing in those countries or other similar actions.</p>	<p>DGIF:</p> <p>It signed a contract with the Spanish Railway Foundation (on 11/07/2011) to carry out a <i>Feasibility study of physical measures to reduce accidents involving persons being struck at stations.</i> The timeframe for the study is five months.</p>

File	CIAF recommendations	Measures adopted by final recipient
0031/10	<p>31/10-1 Insist on strict compliance, by accompanying staff on board the train, with the 'ELIPSOS train-hotel procedure.</p> <p>Activation procedure in the internal communication of the train, closure of external doors and communication of completed operations.'</p> <p>31/10-2 Insist on compliance, by accompanying staff, with Article 313 of the General Traffic Regulations.</p>	<p>Renfe Operadora:</p> <p>From the date of the occurrence of the event, Renfe held workshops at the quarters of the response staff, in which it was made clear that there is an obligation to comply strictly with the actions laid down in the procedure for the 'Elipsos train-hotel.</p> <p>Activation procedure in the internal communication system of the train, closure of external doors and communication of completed operations.'</p> <p>Equally, there was insistence on the need to comply with the provision in Article 313 of the General Traffic Regulations. These workshops were followed by a campaign of inspections on site to observe the degree of compliance with the procedure. After completion of the workshops and inspections, there were no other incidents or failures to comply as from the date of the event (26.06.2010).</p> <p>Consequently, Renfe considers that the adopted measures are sufficient and that the level of compliance with the procedure is satisfactory. Nevertheless, periodic inspections will be maintained so that any deviations from application of the procedure will be detected.</p>

File	CIAF recommendations	Measures adopted by final recipient
0036/10	36/10-1 Continue with inspections, every 30,000 km, of bushes without replacement, in accordance with established specifications and regulations.	Renfe Operadora: With reference to this first recommendation it should be pointed out that inspections of bushes without replacement are carried out regularly every 30,000 km. To date no abnormalities have been detected during these inspections.
	36/10-2 Continue with replacements of the original bush by that of the new design, in accordance with the established plan. Accelerate same if any problem is detected during inspections recommendation 36/10-1.	Renfe Operadora: The manufacturer proceeds with replacement of the original bushes by bushes of the new design, in accordance with the established plan which combines the assembly of the bushes with the assembly of the hollow shaft bearings. Consequently, once assembly of the bearings is finished, the bush replacement operation will be complete. The date set for completion is December 2012.
	36/10-3 Establish a specific plan for monitoring new bushes until their final validation. After that, normal maintenance as established will be resumed.	Renfe Operadora: With respect to this last recommendation, there is, on the part of Renfe and the manufacturer, a specific weekly monitoring of the behaviour of new bushes and bearings which has been satisfactory to date.

File	CIAF recommendations	Measures adopted by final recipient
0053/10	53/10-1 Study the feasibility of installing an exit-indicating signal at signal 1S/I at Redondela station, given the special conditions, it being located on a curve and with the transition from double track to two single tracks, extending the analysis to the remaining exit signals of the said station.	Adif: The interlocking at Redondela station has been replaced by one based on electronic technology and all exits signals have been provided with an advance marker of the ASFA system.

File	CIAF recommendations	Measures adopted by final recipient
0062/10	<p>62/10-1 The periodic inspections should put more emphasis on the condition of the fastenings.</p>	<p>Adif:</p> <p>The Operations and Engineering Directorate, as part of the Conventional Network Maintenance, implemented programmes for intensification of inspection and supervision of the correct state of the fastenings of the sleepers to the track.</p>
	<p>62-10-2 Insist on the need for periodic and appropriate maintenance of all elements of the infrastructure.</p>	<p>Adif:</p> <p>The Traffic Safety Directorate, with its shared sphere of monitoring Traffic Safety Accidents and Incidents, informed the Operations and Engineering Directorate, in its sphere of Conventional Network Maintenance, of the importance of complying with periodic maintenance programmes for all elements making up the railway infrastructure.</p>