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MINISTRY OF INFRASTRUCTURE AND TRANSPORT

Under-Secretariat

RAIL ACCIDENT INVESTIGATION COMMISSION

ANNUAL REPORT 2012

On the Investigation of General Interest Rail Network Accidents and Incidents

Rail Accident Investigation Commission – CIAF. September 2013

Rail Accident Investigation Commission – CIAF

Under-Secretariat
Ministry of Infrastructure
and Transport
Spanish Government

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Spain

NIPO: 161-13-140-X
September 2013

1. INTRODUCTION

1.1. Object and scope

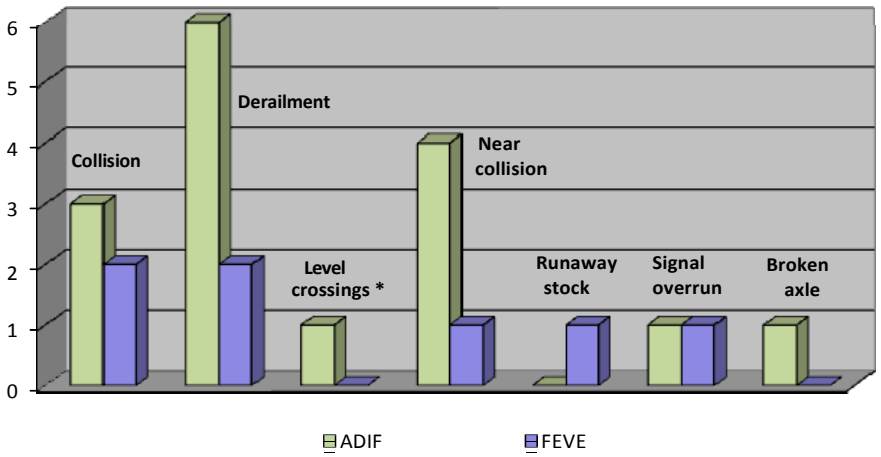
The Rail Accident Investigation Commission (CIAF) is submitting its annual report (the fifth since it was set up and the eighth since the European Safety Directive 49/2004/EC created it) fulfilling the obligation for each country of producing a report every year summarising the investigations carried 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 which has been drawn up within the deadline laid down in Article 25 of the **Regulations on Traffic Safety on the General Interest Rail Network – Royal Decree 810/2007 of 22 June** – summarises 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 2012 that were reported by the infrastructure managers (ADIF, FEVE, TP Ferro and the Port Authorities) and rail undertakings.

In 2012 it was decided to investigate 23 events and draw up 10 preliminary examinations out of a total of 80 that were reported and that took place in the RFIG, whose cataloguing appears in the following table and chart:

Network	Accidents			Incidents				
	Collision	Derailment	Level crossings*	Near collision	Runaway stock	Signal overrun	Broken axle	Total
ADIF	3	6	1	4	0	1	1	16
FEVE	2	2	0	1	1	1	0	7
Total	**5**	**8**	**1**	**5**	**1**	**2**	**1**	**23**

*Includes persons struck at level crossings.



1.2. Introduction of Safety Directive 49/2004/EC

In Spain, the legislative transition process, initiated through promulgation of the Railway Sector Act (Law 39/2003 of 17 November, BOE (Official State Gazette) No 276 of 18 November) and the regulation that implemented it (Royal Decree 2387/2004 of 30 December, BOE No 315 of 31 December), culminated in the approval of the **Regulations concerning traffic safety on the General Interest Rail Network (Royal Decree 810/2007 of 22 June, 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 aforementioned Railway Sector Regulations contained.

The entry into force of the new safety regulations involved, among other things, the creation of a new investigation body: the Rail Accident Investigation Commission (CIAF), which replaced the Department of Railways (DGF) in this task.

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

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

The latest modification to the regulations took place with the publication of Royal Decree 641/2011 of 9 May, published in BOE No 111 of 10 May, which introduced the provisions of Directive 110/2008/EC of the European Parliament and of the Council amending Directive 49/2004/EC in certain aspects, including safety certificates and their scope and was expanded with regard to vehicle maintenance.

1.3. Rationale and objectives of accident and incident investigation

The purpose of rail accident and incident investigation is to determine the causes of these and the circumstances in which they occur, with the aim of avoiding them in future by making appropriate safety 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 Regulations.

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, in its fifth year of responsibility for rail accident investigation and continuing with the trend of the last three years, has focused its investigations on the events (accidents and incidents) whose causes originate in railway activity.

1.4. CIAF activities

1.4.1. Plenary meetings

In 2012 the CIAF Plenary Meeting was held once a month, except for August (holiday period). At these meetings it is decided which other events are investigated, in addition to the most serious, out of all those reported to the CIAF, or of which it is aware, in the period between two consecutive Plenary Meetings. In addition, the technical investigators raise their technical reports on the investigated events for the Plenary Meeting to approve them, if necessary, and make appropriate recommendations in order to prevent the event from recurring. After their approval, in addition to being made public, the final report is sent to the parties concerned.

The preparation of preliminary examinations is also decided in order to ascertain whether or not the event is investigated.

In addition to **resolutions**, approving the final reports, the Plenary Meeting adopts decisions both for initiating investigation into events and for raising issues related to railway safety, which are expressed through **agreements** aimed at the actors in the sector (infrastructure managers, railway undertakings, the national safety authority and other undertakings and bodies). In 2012, the Plenary Meeting issued 23 resolutions and 92 agreements.

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

As part of the network of National Investigation Bodies (NIB) the CIAF attends periodic meetings – generally three times a year – held in the Agency's offices in the French cities of Lille and Valenciennes.

This network, formed by the investigation bodies of the Member States of the European Union, through meetings and the work that it carries out, promotes the investigation of rail accidents and incidents to be carried out as homogeneously as possible. Additionally, it guides its members so that the criteria established by the Safety Directive are applied by all using uniform principles.

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

In 2012 the CIAF, represented by its Secretary, attended three meetings (in February, May and November). In addition, this Commission has a presence in several working groups developing various topics of interest.

1.4.3. Preliminary examinations

Since the beginning of its activity, the CIAF has been developing its approach to deciding on the investigation of a rail event: from an approach focused on the existence of fatalities in its first stage, to focusing the decision on the lessons that can be drawn for improving railway safety.

Nevertheless, there are events for which the decision whether or not to investigate is difficult to make based on the initial data since it is not known in advance whether lessons in terms of safety will be learned. As support in making the decision, in 2010 the CIAF in some cases began making a

preliminary analysis of the main aspects and circumstances of the event – called a **Preliminary Examination** – in order to go further into the initiating circumstances.

These examinations are carried out by the Secretariat of the CIAF and presented to the Plenary Meeting as a basis for making the decision whether or not 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 view of the relevant aspects without making recommendations.

In 2012, ten preliminary examinations were prepared, with the decision being made to investigate one of them. Two of the events dealt with by these preliminary examinations were related to aspects of the rail system (signal overrun and derailment). Four were persons struck when crossing between platforms on station premises and a further four crossing in unpopulated areas (three on open track). Two other events occurred at level crossings located on open track, both involving motor vehicles (one of which was finally investigated).

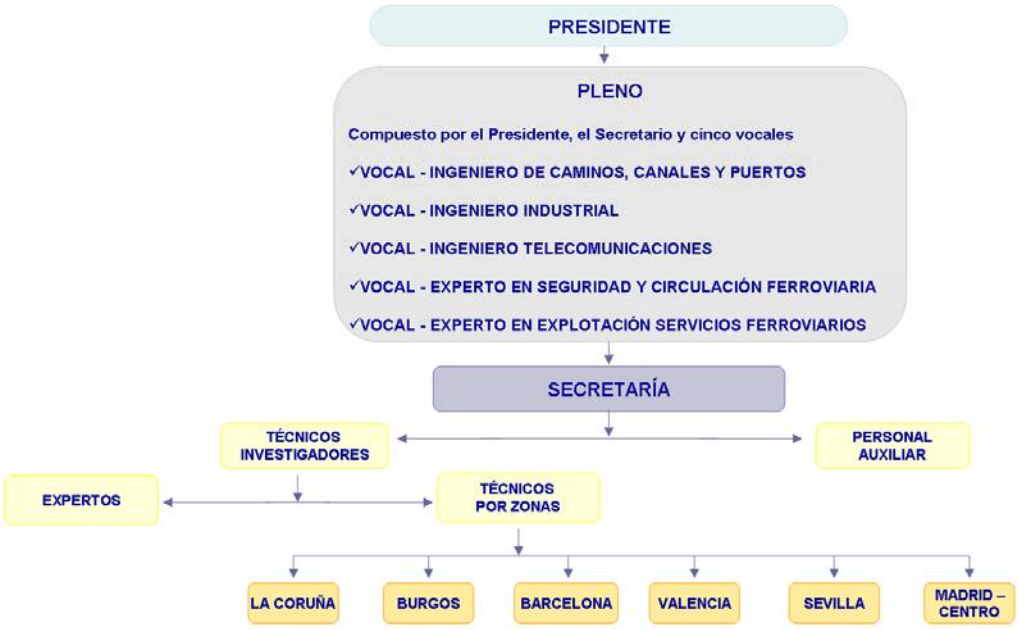
NET-WORK	OPERATOR	FILE No	DATE	MUNICIP-ALITY	PROVINCE	LINE	K.P.	FATAL-ITIES	SERIOUS INJURIES	MINOR INJURIES	EVENT CLASSIFICATION	TYPE	VEHICLE/ PEDESTRIAN	PLACE	STATUS
ADIF	RENFE OPERADORA	0014/12	11/01/2012	Alp	Gerona	222 Barcelona-Montcada Jct.–La Tour de Carol	35,100				INCIDENT	SIGNAL OVERRUN	TRAIN	STATION	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0023/12	22/03/2012	Pradell de la Teixeta	Tarragona	210 Miraflores-Tarragona	556,100				ACCIDENT	DERAILMENT	TRAIN	STATION	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0027/12	07/04/2012	Cabezón de Pisuerga	Valladolid	100 Madrid-Hendaye	261,257	1			ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	CYCLIST	STATION	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0033/12	09/05/2012	Irurtzun	Navarre	710 Altsasu-Castejón de Ebro	202,688	1			ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	PEDESTRIAN	STATION	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0058/12	29/08/2012	Cambrils	Tarragona	600 Valencia-San Vicente de Calders	261,200	1		1	ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	PEDESTRIAN	TRACK	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0066/12	09/10/2012	Llanera	Asturias	130 Venta de Baños-Gijón	155,400	2			ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	PEDESTRIAN	HALT (UNSTAFFED STATION)	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0068/12	28/10/2012	Sigüenza	Guadalajara	200 Madrid-Barcelona	139,750	1			ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	PEDESTRIAN	STATION	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0071/12	29/10/2012	Miguelturra	Ciudad Real	522 Manzanares-Ciudad Real	257,758			1	ACCIDENT	LEVEL CROSSINGS	MOTOR VEHICLE	TRACK	INVESTIGATED
FEVE	FEVE	0073/12	07/12/2012	Noreña	Asturias	061 Gijón-Laviana	19,938	1			ACCIDENT	INJURY TO PERSONS CAUSED BY ROLLING STOCK	PEDESTRIAN	HALT (UNSTAFFED STATION)	NOT INVESTIGATED
ADIF	RENFE OPERADORA	0075/12	17/12/2012	Albaida	Valencia	342 Alcoi-Xátiva	29,674	1			ACCIDENT	LEVEL CROSSINGS	MOTOR VEHICLE	TRACK	NOT INVESTIGATED

2. ORGANISATION OF THE RAIL ACCIDENT INVESTIGATION COMMISSION

The CIAF, set up on 11 December 2007, is a specialised collegiate 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.

Up to March 2012, the CIAF was attached to the Ministry of Infrastructure and Transport through the General Secretariat for Transport, and then to the Under-Secretariat.



PRESIDENTE	CHAIRMAN
PLENO	PLENARY MEETING
Compuesto por el Presidente, el Secretario y cinco vocales	Composed of the Chairman, the Secretary and five members
VOCAL - INGENIERO DE CAMINOS, CANALES Y PUERTOS	MEMBER – ENGINEER FOR ROADS, CANALS AND PORTS
VOCAL - INGENIERO INDUSTRIAL	MEMBER – INDUSTRIAL ENGINEER
VOCAL - INGENIERO TELECOMUNICACIONES	MEMBER – TELECOMMUNICATIONS ENGINEER
VOCAL - EXPERTO EN SEGURIDAD Y CIRCULACIÓN FERROVIARIA	MEMBER – EXPERT IN RAIL SAFETY AND TRAFFIC
VOCAL - EXPERTO EN EXPLOTACIÓN SERVICIOS FERROVIARIOS	MEMBER – EXPERT IN RAIL SERVICES OPERATION
SECRETARÍA	SECRETARIAT
TÉCNICOS INVESTIGADORES	INVESTIGATIVE TECHNICIANS
PERSONAL AUXILIAR	AUXILIARY STAFF
EXPERTOS	EXPERTS
TÉCNICOS POR ZONAS	TECHNICIANS BY AREA
LA CORUÑA	CORUNNA
SEVILLA	SEVILLE
MADRID-CENTRO	MADRID-CENTRE

The Commission relies on two investigative technicians attached to the Secretariat, who are responsible for carrying out investigations and producing the corresponding reports, with the cooperation of the infrastructure manager's safety managers and the undertakings involved in the

investigated event.

The CIAF also has the support of a territorial network of technicians who, by way of an assignment 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 the 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 'Guidelines for the technical investigation of rail accidents falling under the jurisdiction of 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 interest.

Subsequently, it published the document **'Technical investigation procedure for rail accidents and incidents'**, edited in October 2008, which sets out the basic procedures and defines the process for the investigation of rail accidents and incidents. This procedure 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 guidelines for investigation with the publication of the **'Procedure for the technical investigation of accidents to persons caused by rolling stock in motion'**, thereby totally revoking Circular Order 1/2008.

In 2012 there was no legislation in addition to the above.

4. ACCIDENT AND INCIDENT INVESTIGATION

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 the provisions of Article 21(3) of the **Regulations concerning traffic safety on the General Interest Rail Network (Royal Decree 810/2007 of 22 June)**. These 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) Its repercussions for the safety of rail traffic.

d) Requests from the Rail Infrastructure Administrator, the rail undertakings or the Ministry of Infrastructure and Transport.'

Following the principle of improving the safety of the rail system, the CIAF undertakes the investigation of other events (accidents and incidents), in addition to the serious accidents that it is obliged to cover, whose analysis may have a bearing on such improvement.

Accordingly, by continuing with the criterion established by the Commission in 2009, in 2012 some of the fatal accidents that occurred on the RFIG were not investigated, the cause of which was obviously due to the reckless behaviour of third persons. Conversely, other non-fatal accidents and incidents were analysed, on the assumption that their study may provide lessons in helping to reduce the accident rate. These events are mainly certain collisions and derailments and near collisions, expanding the list to other accident precursors such as runaway stock or broken axle.

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

4.2.1. Distribution by type

In 2012 a total of 23 events were investigated on the RFIG the classification of which by type and network manager is shown in the table on page 1 and which is repeated here to facilitate reading:

Network	Accidents			Incidents				
	Collision	Derailment	Level crossings	Near collision	Runaway stock	Signal overrun	Broken axle	Total
ADIF	3	6	1	4	0	1	1	16
FEVE	2	2	0	1	1	1	0	7
Total	**5**	**8**	**1**	**5**	**1**	**2**	**1**	**23**

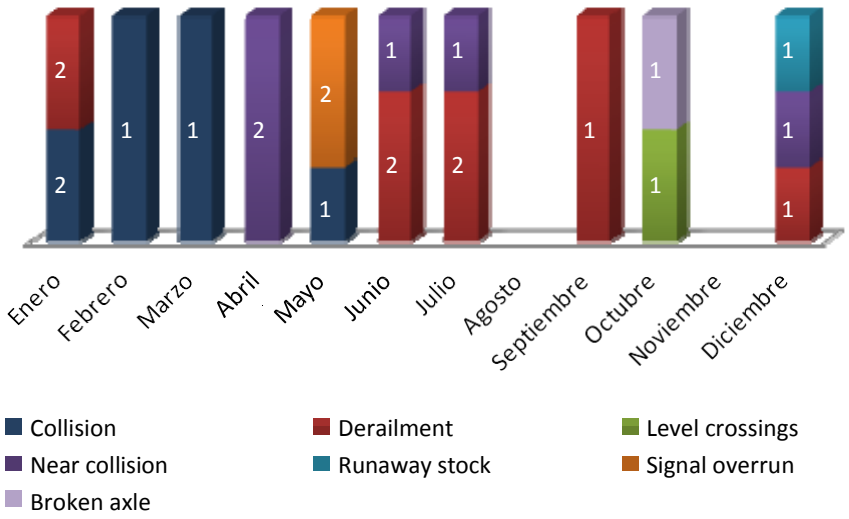
Of the events investigated, 35% were accidents due to derailment, followed by accidents due to collision and near collision incidents, each representing 22%. As in 2011, the events in which the determining factors were related to the rail system represented more than 95% (22) of those investigated.

4.2.2. Monthly distribution

The monthly average of the events under investigation (2) follows the trend of the last two reports.

MONTHLY DISTRIBUTION OF INVESTIGATED ACCIDENTS AND INCIDENTS

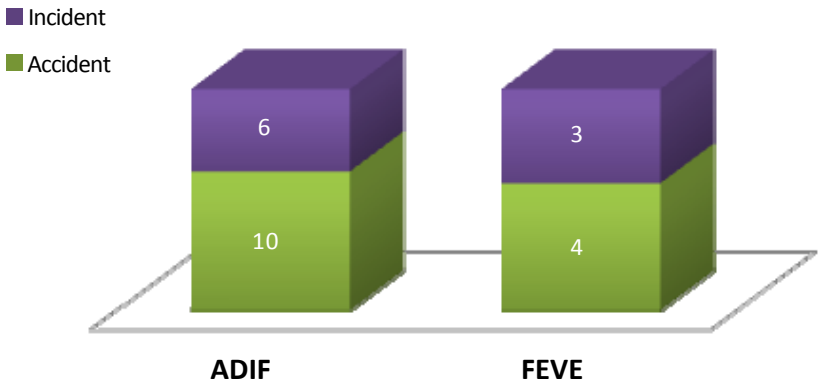
	Accident			Incident				
TYPE / MONTH	Collision	Derailment	Level crossings	Near collision	Runaway stock	Signal overrun	Broken axle	Total
January	2	2						4
February	1							1
March	1							1
April				2				2
May	1					2		3
June		2		1				3
July		2		1				3
August								0
September		1						1
October			1				1	2
November								0
December		1		1	1			3
Total	**5**	**8**	**1**	**5**	**1**	**2**	**1**	**23**



Enero	January
Febrero	February
Marzo	March
Abril	April
Mayo	May
Junio	June
Julio	July
Agosto	August
Septiembre	September
Octubre	October
Noviembre	November
Diciembre	December

4.2.3. Distribution by network

Of the 80 events reported (64 accidents, 12 incidents and 4 suicides), 23 were investigated: 16 occurred on the rail network administered by ADIF (10 accidents and 6 incidents) and 7 on the network managed by FEVE (4 accidents and 3 incidents).



4.2.4. Accident rate of investigated events

Out of the total investigated accidents and incidents there were 48 victims, none of which were fatal and the rest, all but one, were minor injuries, being concentrated in four events (three collisions and one level-crossing accident).

The following table shows their distribution, according to the network and the classification of the event:

			ADIF			FEVE					
Classification	Type	Number of events	Fatalities	Serious injuries	Minor injuries	Fatalities	Serious injuries	Minor injuries	Total fatalities	Total SI	Total MI
Accident	Collision (trains)	2			27			9	0	0	36
	Collision (obstacle)	3		1	10				0	1	10
	Derailment	8							0	0	0
	Level crossings	1			1				0	0	1
ACCIDENT total		**14**	**0**	**1**	**38**	**0**	**0**	**9**	**0**	**1**	**47**
Incident	Near collision	5							0	0	0
	Runaway stock	1							0	0	0
	Signal overrun	2							0	0	0
	Broken axle	1							0	0	0

INCIDENT total	**9**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
GENERAL total	**23**	**0**	**1**	**38**	**0**	**0**	**9**	**0**	**1**	**47**

Virtually all the minor injuries (98%) and the only serious injury were involved in collisions, 78% of them in train collisions and the rest in collisions with obstacles on the track. The only event that occurred at a level crossing caused the driver of the motor vehicle to be slightly injured at the crossing which was protected by fixed signals (type A).

4.2.5. Average time for production of reports

The following table shows the time, in months, that elapsed from when the event occurred until the final report on its investigation was approved.

The average was 9 months: of the investigations carried out, 61% were performed in the same or a shorter period and 39% required a longer period.

	Accident			Incident				
TYPE / MONTHS	Collision	Derailment	Level crossings	Near collision	Runaway stock	Signal overrun	Broken axle	Total
3			1					1
6				1				1
7		1				1		2
8	2			1			1	4
9	1	2		1	1	1		6
10	1	4		1				6
11	1	1						2
12				1				1
Total	**5**	**8**	**1**	**5**	**1**	**2**	**1**	**23**
Average	**9**	**9**	**3**	**9**	**9**	**8**	**8**	**9**

4.2.6. List of investigated events

The following table shows the main data identifying each of the events investigated sorted by their file number. All investigations started in 2012 have already been completed.

Also included is a map of the geographical distribution of the 23 events investigated showing their dispersal. Note that only five events occurred in Aragon and four in Asturias (metre gauge

network).

NET-WORK	OPERATOR	FILE No	DATE	MUNICIPALITY	PROVINCE	LINE	K.P.	FATAL-ITIES	SERIOUS INJURIES	MINOR INJURIES	EVENT CLASSIFICA-TION	TYPE	VEHICLE/ PEDESTRIAN	PLACE	STATUS	RECOMMEND-ATIONS
FEVE	FEVE	0004/12	12/01/2012	Oviedo	Asturias	012 Oviedo-San Esteban de Pravia	5,265			9	ACCIDENT	COLLISION (TRAINS)	TRAIN	STATION	CLOSED	1
FEVE	FEVE	0005/12	15/01/2012	Oviedo	Asturias	012 Oviedo-San Esteban de Pravia	298,108				ACCIDENT	DERAILMENT	TRAIN	STATION	CLOSED	3
FEVE	FEVE	0006/12	19/01/2012	Parres	Asturias	021 Oviedo-Santander	378,049				ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	0
ADIF	RENFE OPERADORA	0007/12	19/01/2012	Barcelona	Barcelona	262 Sagrera Jct.-Clot Jct.	109,810			27	ACCIDENT	COLLISION (TRAINS)	TRAIN	TRACK	CLOSED	2
ADIF	RENFE OPERADORA	0010/12	09/02/2012	Mataró	Barcelona	276 Maçanet-Massanes-Barcelona-Sagrera	28,158		1	10	ACCIDENT	COLLISION (OBSTACLE)	TRAIN	STATION	CLOSED	2
ADIF	RENFE OPERADORA	0022/12	12/03/2012	Socuéllamos	Ciudad Real	300 Madrid-Valencia	188,690				ACCIDENT	COLLISION (OBSTACLE)	TRAIN	STATION	CLOSED	2
FEVE	FEVE	0028/12	18/04/2012	Medio Cudeyo	Cantabria	024 Santander-Bilbao	545,009				INCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	1
ADIF	LOGITREN	0030/12	26/04/2012	Cerveruela	Saragossa	214 C.I.M. de Zaragoza-Cartuja	16,973				INCIDENT	NEAR COLLISION	TRAIN	SIDING	CLOSED	0
FEVE	FEVE	0034/12	09/05/2012	El Astillero (The Shipyard)	Cantabria	024 Santander-Bilbao	540,782				INCIDENT	SIGNAL OVERRUN	TRAIN	STATION	CLOSED	2
FEVE	FEVE	0035/12	11/05/2012	Narón	La Coruña (Corunna)	011 Ferrol-Gijón	8,645				ACCIDENT	COLLISION (OBSTACLE)	TRAIN	TRACK	CLOSED	0
ADIF	RENFE OPERADORA	0040/12	23/05/2012	Íllora	Granada	426 Granada-Fuente de Piedra	88,008				INCIDENT	SIGNAL OVERRUN	TRAIN	STATION	CLOSED	1
ADIF	RENFE OPERADORA	0041/12	01/06/2012	Falset	Tarragona	210 Miraflores-Tarragona	558,049				ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	1
ADIF	RENFE OPERADORA	0045/12	15/06/2012	Arévalo	Ávila	100 Madrid-Hendaye	169,839				INCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
ADIF	RENFE OPERADORA	0047/12	01/07/2012	Saragossa	Saragossa	060 Zaragoza-Delicias Changer Jct. – Zaragoza-Delicias Changer	305,745				ACCIDENT	DERAILMENT	TRAIN	STATION (GAUGE CHANGER)	CLOSED	0
ADIF	RENFE OPERADORA	0050/12	21/06/2012	Plasencia de Jalón	Saragossa	052 Plasencia de Jalón Changer Jct. – Plasencia de Jalón Changer	276,705				ACCIDENT	DERAILMENT	TRAIN	STATION (GAUGE CHANGER)	CLOSED	2
ADIF	RENFE OPERADORA	0051/12	19/07/2012	Montoro	Cordoba	400 Alcázar de San Juan-Cádiz	393,525				ACCIDENT	DERAILMENT	TRAIN	TRACK	CLOSED	3
ADIF	RENFE OPERADORA	0053/12	26/07/2012	Madrid	Madrid	900 Madrid Chamartín-Madrid Atocha	0,033				INCIDENT	NEAR COLLISION	TRAIN	TRACK	CLOSED	0
ADIF	TRANSFESA	0061/12	06/09/2012	Almudévar	Huesca	200 Madrid-Barcelona	43,800				ACCIDENT	DERAILMENT	TRAIN	STATION	CLOSED	6
ADIF	RENFE OPERADORA	0064/12	08/10/2012	Zuera	Huesca	200 Madrid-Barcelona	25,100				INCIDENT	BROKEN AXLE	TRAIN	TRACK	CLOSED	1
ADIF	RENFE OPERADORA	0071/12	29/10/2012	Miguelturra	Ciudad Real	522 Manzanares-Ciudad Real	257,758			1	ACCIDENT	LEVEL CROSSINGS	MOTOR VEHICLE	TRACK	CLOSED	2
FEVE	FEVE	0074/12	06/12/2012	Laviana	Asturias	061 Gijón-Laviana	49,700 36,915				INCIDENT	RUNAWAY STOCK	TRAIN	STATION	CLOSED	3
ADIF	RENFE OPERADORA	0076/12	21/12/2012	Valencia	Valencia	600 Valencia-San Vicente de Calders	2,000				INCIDENT	NEAR COLLISION	TRAIN	STATION	CLOSED	0
ADIF	ACTIVA RAIL	0077/12	24/12/2012	Lezama	Vizcaya	700 Casetas-Intermodal Abando Indalecio Prieto	194,025				ACCIDENT	DERAILMENT	TRAIN	STATION	CLOSED	1

ESTACIONES CATEGORÍA 1	CATEGORY 1 STATIONS
ESTACIONES DE VIAJEROS	PASSENGER STATIONS
LÍNEAS ALTA VELOCIDAD	HIGH SPEED LINES
LÍNEAS ALTA VELOCIDAD	HIGH SPEED LINES
NÚCLEOS DE CERCANÍAS	COMMUTER CENTRES
TERCER CARRIL	THIRD RAIL
LÍNEAS CONVENCIONALES	CONVENTIONAL LINES
LÍNEAS ANCHO MÉTRICO	METRE GAUGE LINES
y	and

Collision (A)

Derailment (A)

Level crossings (A)

Near collision (I)

Map: ADIF Network Statement 2013

Remaining incidents (I)

4.3. Analysis by type

4.3.1. Serious accident

No serious accident occurred in 2012, according to the definition of this type of event laid down in Royal Decree 810/2007.

4.3.2. Accident

4.3.2.1. Collision

Five collision accidents were investigated in 2012: two by trains (front to end and front to front) and three against obstacles (two, in station – buffer and work objects – and one, on open track – tree). Of these, three occurred on the network managed by ADIF and two on the FEVE metre gauge network.

Three of these collisions caused virtually all the injuries (98%), all minor except for one serious injury.

The cause of all of them was attributable to the rail system: all but one due to non-compliance with regulations or procedures by the staff. Investigation of the five collisions led to seven recommendations representing 21% of all the recommendations made in the 23 investigations carried out.

	NETWORK	TYPE	FILE No	LINE	PROVINCE	KP
ACCIDENT	FEVE	COLLISION (TRAINS)	0004/12	012 Oviedo-San Esteban de Pravia	Asturias	5,265
	ADIF		0007/12	262 Sagrera Jct.- Clot Jct.	Barcelona	109,810
	ADIF	COLLISION (OBSTACLE)	0010/12	276 Maçanet-Massanes-Barcelona-Sagrera	Barcelona	28,158
			0022/12	300 Madrid-Valencia	Ciudad Real	188,690
	FEVE		0035/12	011 Ferrol-Gijón	La Coruña (Corunna)	8,645

A summary is given below of each of these accidents, with their basic data, the conclusion and the recommendations that were made.

File	Date	Line	Administrator	Operator	Place
0004/12	02/01/2012	012 Oviedo-San Esteban de Pravia	FEVE	FEVE	**Station**

Summary:

FEVE regional passenger train 1301 from Ferrol to Oviedo was halted at the platform on track 2 of San Claudio station. After performing its commercial operations it resumed running without waiting for the crossing that had been set on the board with FEVE commuter train 3720 at this station. It started on its way without realising that exit signal S1/2 was indicating stop, improperly overrunning this signal. Emergency braking was activated by the ASFA system and switch A2 was forced open to pass over it, since it was aligned towards track 1 for commuter train 3720 from Oviedo to Trubia, which had an entry route set for the station.

A head-on collision took place between the two trains, leading to the derailment of the two axles of the second bogie of the head unit of train 3720.

As a result of the accident nine people were slightly injured, eight of them passengers plus the driver of train 3720.

Conclusion:

The accident was caused by passenger train 1301 improperly overrunning exit signal S1/2, indicating stop, due to failure to comply with the orders given by the signals to the driving staff.

Recommendations

Recommend-ation	**04/12-1** To stress regulatory compliance by driving personnel, especially with article 2.27.00 Chapter II "Train Traffic" of the Rail Traffic Regulations (RCT).
Final recipient	FEVE

File	Date	Line	Administrator	Operator	Place
0007/12	19/01/2012	262 Sagrera Jct. - Clot Jct.	ADIF	Renfe Operadora	**Open track**
Summary:	Train 37506 (Talgo empty stock of train 00273) running from Barcelona Sant Andreu Comtal to Barcelona Estació de França station was halted in front of entry signal 1094 (KP 109+499) at the Glorias Jct., which was indicating stop. At the same time, commuter train 25652, moving in the same direction, from Maçanet-Massanes to L'Hospitalet de Llobregat, passed stop and proceed signal 1100 (KP 110+313), prior to 1094 in the direction of travel, and stopped at the halt of El Clot-Aragó in Barcelona (located between these two signals), where it performed a commercial stop. After completing this, it resumed its journey, colliding with the rear end of train 37506 which remained held up in front of signal 1094. The collision caused the derailment of the 13th axle of train 37506 and damage to its rear carriage and the front of the head carriage of train 25652. As a result of the accident 27 people were slightly injured (two employees of the 37506 train crew and 25 passengers of train 25652).				
Conclusion:	The accident was due to human error by the driving staff not complying with running on sight as laid down in the regulations.				
Recommendations					
Recommend-ation	**07/12-1** To examine the feasibility of preventing speed being pre-set when running on sight.				
Final recipient	Renfe Operadora				
Recommend-ation	**07/12-2** To examine the feasibility of those advanced signals in a state of stop and proceed changing to absolute in similar cases to this event.				
Final recipient	ADIF				

File	Date	Line	Administrator	Operator	Place
0010/12	09/02/2012	276 Maçanet-Massanes–Barcelona-Sagrera	ADIF	Renfe Operadora	**Station**

Summary:

Passenger (commuter) train 28867, belonging to the railway undertaking Renfe Operadora, proceeding from Molins de Rei and ending its run in the station of Mataró, collided with the buffer of track four.

The train passed through crossover points 1-3 and 5-7 giving access to track 4A at a speed of 40 kph, more than the maximum 30 kph speed limit laid down for advanced warning signal 255 which was indicating caution (yellow-green). The train continued its progress and collided with the track 4 buffer at a speed of 23 kph, without using the brake over the last few metres.

After the collision, the head railcar had overridden the buffer, the first carriage was completely derailed, the body had mounted the buffer and the first bogie was embedded in it. The first bogie of the second carriage was derailed in the direction of travel.

This resulted in serious injury to the driver of the train and minor injuries to ten passengers.

Conclusion:	The accident was due to human error by the driving staff, through failure to comply with the orders given by the signals and not paying due attention while driving.
Recommendations	
Recommend-ation	**10/12-1** To study the possibility of installing ASFA beacons with an L7 fixed base (speed control) on tracks with a buffer and a high number of passenger train entries.
Final recipient	ADIF
Recommend-ation	**10/12-2** To study the possibility of installing buffers that absorb and cushion the impact of trains on those lines where a large number of passenger trains end their journey.
Final recipient	ADIF

File	Date	Line	Administrator	Operator	Place
0022/12	12/03/2012	300 Madrid-Valencia	ADIF	Renfe Operadora	**Station**
Summary:	Renfe Operadora passenger train 222 from Madrid Chamartin to Cartagena collided with a square screen stop signal, a motor-driven sleeper-screw driver and hand tools for track work, belonging to the operatives who were replacing the No 8 points crossing on track 2, at the station of Socuéllamos on the Madrid Chamartin–Valencia North Station 300 line.  There were no personal injuries as a result of the accident.				
Conclusion:	The accident was due to human error by the traffic staff, by setting a route via track 2 for train 222 when work was being carried out on this track, and by the person in charge of the work not taking appropriate safety measures.				
Recommendations					
Recommend-ation	**22/12-1** To convey, to both those responsible for train traffic and those responsible for track work, the need for strictly enforcing the relevant provisions of the General Traffic Regulations.				
Final recipient	ADIF				
Recommend-ation	**22/12-2** To set up a programme for the prevention of human error in matters related to track work, intended for traffic staff (including the control centre) and infrastructure staff (in-house and external).				
Final recipient	ADIF				

File	Date	Line	Administrator	Operator	Place
0035/12	11/05/2012	011 Ferrol-Gijón	FEVE	FEVE	**Open track**

Summary:

FEVE commuter train 1903, with seven passengers and the driver, was running normally and on schedule from Ferrol to Cerdido. Coming out of a curve to the right in the direction of travel, the driver realised that the track width was occupied by a large tree that had fallen on it (brought down by the strong gusts of wind prevailing at the time and by the state of decay of the roots and trunk).

The driver of the train used the emergency brake without being able to avoid a collision, which caused the derailment of the first bogie of the UTDH forming train 1903, and when this had almost stopped, caused the UTDH to overturn towards the left-hand side of the track in the direction of travel.

There were no fatalities or injuries as a result of the accident.

Conclusion:

The accident was due to train 1903 colliding with an obstacle – a large pine that had fallen across the width of the track.

Recommendations

Recommend-ation

Since the existing measures and those taken were considered adequate, no recommendations were made.

4.3.2.2. Derailment

In 2012 eight derailment accidents were investigated, all but two of which occurred in the network managed by ADIF. None of these eight accidents resulted in any victims.

The cause of all these accidents was attributable to the railway system. In five of them an equipment fault was partly the cause of the event, sharing responsibility in two of them: one with infrastructure failure, and the other with human error. The investigation of these eight accidents resulted in 16 recommendations, representing 48% of the total made.

	NETWORK	TYPE	FILE No	LINE	PROVINCE	KP
ACCIDENT	FEVE	DERAILMENT	0005/12	012 Oviedo-San Esteban de Pravia	Asturias	298,108
			0006/12	021 Oviedo-Santander	Asturias	378,049
	ADIF		0041/12	210 Miraflores-Tarragona	Tarragona	558,049
			0047/12	060 Zaragoza-Delicias Changer Jct. – Zaragoza-Delicias Changer	Saragossa	305,745
			0050/12	052 Plasencia de Jalón Changer Jct. – Plasencia de Jalón Changer	Saragossa	276,705
			0051/12	400 Alcázar de San Juan-Cádiz	Cordoba	393,525
			0061/12	200 Madrid-Barcelona	Huesca	43,800
			0077/12	700 Casetas-Intermodal Abando Indalecio Prieto	Vizcaya	194,025

A summary is given below of each of these accidents, with their basic data, the conclusion and the recommendations that were made.

File	Date	Line	Administrator	Operator	Place
0005/12	15/01/2012	012 Oviedo-San Esteban de Pravia	FEVE	FEVE	**Station**

Summary:

FEVE special freight train EB904 from Aboño to the Soto de Ribera thermal power station, consisting of 2 locomotives and 16 wagons (16 hoppers loaded with coal), was derailed at KP 298+108 two metres after switch A4 and 11 metres before the level crossing at the station of Trubia.

The train was running normally when, after passing through switch A4, the second bogie of the fourth carriage of the train set in the direction of travel was derailed, stopping 90 metres after the point of derailment.

The wagon was derailed towards the right-hand side in the direction of travel of the train (high rail).

No personal injuries occurred.

Conclusion:

The accident was caused by the technical failure of the infrastructure since, in the area where the train was derailed, there was deficient track alignment and levelling, as well as significant potholes and ballast contamination.

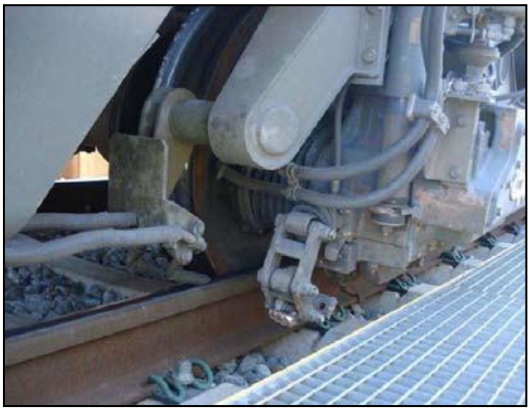
Recommendations

Recommend-ation	**05/12-1** To restore the values of the geometric parameters of the track in the section where the accident occurred in accordance with those of track standard NFI 001 for safe train travel.
Final recipient	FEVE
Recommend-ation	**05/12-2** To examine the feasibility of cleaning and improving the superstructure of the track in the area of the derailment, in order to prevent premature deformations.
Final recipient	FEVE
Recommend-ation	**05/12-3** When track inspection (auscultation) is performed and areas are detected with out-of-tolerance parameter values, this being significant, to take action immediately in these areas of the layout by carrying out maintenance work.
Final recipient	FEVE

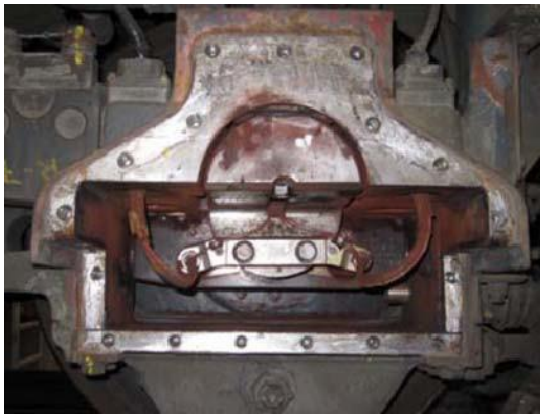
File	Date	Line	Administrator	Operator	Place
0006/12	19/01/2012	021 Oviedo-Santander	FEVE	FEVE	**Open track**

Summary:	 FEVE freight train 9561 (type 50), travelling from El Berrón (Asturias) to Santander, composed of two locomotives and 20 platform wagons (14 loaded with steel coils and 6 with empty containers), after passing through the station of Soto de Dueñas at 54 kph, increased its speed up to 70 kph, at this speed passing through the caution signals and 40 kph permanent speed limit signs (for curve). About 100 metres from this last signal, and already on the curve, electric braking was applied and derailment occurred. The train split up, leaving in front the two locomotives and the first three wagons on the track and the fourth derailed. Behind, and at a distance of 140 metres, the next six wagons were derailed, and the remaining ten wagons of the train set stayed on the track. There were no personal injuries as a result of the derailment.
Conclusion:	The accident was caused by the excessive speed of the train when travelling on a curve with a permanent speed limit, due to failure to comply with the orders given by the signals to the driving staff.
Recommendations	
Recommend-ation	The measures adopted being considered adequate, no recommendations were made.

File	Date	Line	Administrator	Operator	Place
0041/12	01/06/2012	210 Miraflores - Tarragona	ADIF	Renfe Operadora	**Open track**
Summary:	The first axle of the penultimate wagon in the direction of travel was derailed when freight train 92559 belonging to the railway undertaking Renfe Operadora was travelling from Barcelona-Can Tunis to Zaragoza Corbera Alta in tunnel No 73 'L'Argentera'. The right-hand wheel derailed outwards from the rail and the left-hand wheel derailed inwards (between the two rails). The exact KP where the wheel lifted is not known, taking KP 558+049 as 'point 0', where the wheel fell. The train travelled on derailed and at the entrance to the station of Pradell (KP 556+098), on passing through the points, the derailed wheel hit crossings and switches, derailing the second axle of the penultimate wagon and the two axles of the last wagon. Train 92559 continued running derailed from the last two tail wagons. When the train reached the station of Marçá-Falset (KP 551+348) its route was set towards track 3 and, on passing points 1/3, the antepenultimate wagon was also derailed. The cause of the train running with the last three wagons derailed was a split in the automatic brake hose (ABH) between the penultimate and the last wagon, which caused it to stop at KP 551+569 at the level of signal indicator IS2/1, having travelled derailed for about 6 kilometres and causing substantial damage to the infrastructure.				
Conclusion:	The accident was due to the failure of the infrastructure, mainly due to an incorrect arrangement of a section of track in this area.				
Recommendations					
Recommend-ation	**41/12-1** On the basis of the document *Manual of the Traffic Safety Management System of the Operations and Engineering Department* of ADIF, to perform an audit of corrective infrastructure maintenance activities in the area of Tarragona, in order to verify the correct application of the regulations in this regard.				
Final recipient	ADIF				

File	Date	Line	Administrator	Operator	Place
0047/12	01/07/2012	060 Zaragoza-Delicias Changer Jct.– Zaragoza-Delicias Changer	ADIF	Renfe Operadora	**Station (gauge changer)**
Summary:	On Renfe Operadora passenger train 534, composed of CAF stock of the 120 series, travelling from Barcelona Sants to Irun, passing through the gauge changer, the left wheel of the ninth axle (of the third carriage's first bogie) of the train set, in the direction of travel, did not make the gauge change, remaining in UIC gauge. The staff of the facility realised the situation and informed the driver via train-ground communication. The driver applied the emergency brake causing the train to come completely to a halt inside the changer facilities, with the aforementioned wheel derailed. 				
Conclusion:	The derailment occurred due to a failure in the gauge changing system of the left wheel of the ninth axle, corresponding to the first axle of the first bogie of the third carriage of the train set, in the direction of travel, due to the support fastening screws of the safety device lever breaking. This breakage caused the lever to become loose, so that in the gauge change operation it did not act and did not lead to unlocking so that the gauge change did not take place, leaving the wheel set in UIC gauge.				
Recommendations					
Recommend-ation	The measures adopted being considered adequate, no recommendations were made.				

File	Date	Line	Administrator	Operator	Place
0050/12	21/06/2012	052 Plasencia de Jalón Changer Jct. – Plasencia de Jalón Changer	ADIF	Renfe Operadora	**Station (gauge changer)**

Summary:	 Renfe Operadora passenger train 601, from Madrid - Puerta de Atocha to Pamplona, was running normally on UIC gauge and had to change to Iberian gauge when passing through the Plasencia de Jalón changer. When this gauge change was taking place, the train was halted when the staff of the changer facility alerted the driver. It was found that the 8th axle was derailed when the left-hand wheel in the direction of travel did not make the gauge change. Outwardly the train set seemed completely normal. Then, once the axle box of the derailed wheel was uncovered, it was found that there were no cracks in the gauge change devices. However, the appearance inside displayed evidence of a lack of lubrication of the components that make up the gauge change locking mechanism. As a result, the pin locking the wheel in position was stuck in UIC gauge, so that the guide rails of the platform could not pull the wheel over to the Iberian gauge.
Conclusion:	The derailment was caused by a fault in the axle gauge change system of the left-hand wheel of the train set's eighth axle in the direction of travel, due to the wheel's gauge change locking mechanism not working properly, as a result of lack of lubrication.
Recommendations	
Recommend-ation	**50/12-1** To specify in the maintenance instructions how the operation of lubricating the locking pins should be carried out in order to be effective. To ensure that the maintenance operation is properly carried out, the operatives who will perform it will be trained and random checks made to see that it is done correctly.
Final recipient	Renfe Operadora
Recommend-ation	**50/12-2** To ask the technologist to study using types of fittings other than the pin and bushing to reduce wear and lubrication requirements.
Final recipient	Renfe Operadora

File	Date	Line	Administrator	Operator	Place
0051/12	19/07/2012	400 Alcázar de San Juan-Cádiz	ADIF	Renfe Operadora	**Open track**

Summary:

When freight train CGX10, belonging to the railway undertaking Renfe Operadora, travelling from Vicálvaro-Puerto Seco (Madrid) bound for Algeciras, was passing through the hot axle detector (DEC) at KP 384+625, on the way from Los Siles to Villa del Río, an alarm occurred in the recorder located in the Auxiliary Control Centre of Cordoba, due to overheating (151°C) in the axle box on the left-hand side of axle 39 in the direction of travel. When the head of CTC [Centralised Traffic Control] of the Cordoba Control Centre became aware of the alarm, he unsuccessfully tried to contact the driver of train CGX10 via the analogue (train-ground) radio-telephone system, to inform him that the axle was overheating.

Just over three minutes after the alarm, and as the train was passing through the exit signal of Villa del Río (KP 387+625), the head of CTC managed to notify the driver by mobile phone regarding the incident, informing him that the train would be placed aside at the next station (Montoro, KP 397+720) for checking the axle concerned.

Subsequently, at KP 393+525 the left-hand wheel of axle 39 was derailed and after travelling derailed for some 3 300 metres the train came to a stop.

The driver notified the head of CTC that the train had stopped at KP 397+055, between the advanced warning signal and the entry signal to Montoro station, after he had applied the emergency brake, on noticing that the catenary contact wire had fallen onto the locomotive.

After the driver had checked the train, he reported that the wagon with the overheating had been derailed, affecting its cargo (a container), which had overturned. He also reported that overhead contact and catenary line posts had fallen down.

Conclusion:

The derailment was caused by a technical failure of the equipment, when the left-hand stub shaft of the first axle of the eighteenth wagon of the train set, in the direction of travel, had broken as a result of overheating of the axle box, together with some mishandling of the incident by the traffic staff. As a contributory cause it should be pointed out that the derailed train was running outside the assigned train-ground channel.

Recommendations	
Recommend-ation	**51/12-1** To draw up specific regulations for acting in the case of entering to repair a wheelset without the axle box cover, specifying the checks and measurements to be made on bearings and axle, together with an inspection sheet for entering the operations carried out in the light of the results. These regulations could be incorporated into the current Technical Standard for Maintaining Wheelsets.
Final recipient	Renfe Operadora
Recommend-ation	**51/12-2** To stress to driving staff on refresher courses the desirability of checking that the train-ground settings and channel when travelling match those assigned.
Final recipient	Renfe Operadora
Recommend-ation	**51/12-3** Recommendation No 4 made in file 63/2010 is repeated: To study the suitability of making changes to the existing regulations on the management of alarms that occur in hot axle detector equipment.
Final recipient	Department of Railways (DGF)

File	Date	Line	Administrator	Operator	Place
0061/12	06/09/2012	200 Madrid-Barcelona	ADIF	Transfesa	**Station**

Summary:

Freight train 82658, run by Renfe Operadora with 23 car-carrier wagons belonging to Semat-Transfesa, travelling from Pamplona to Barcelona Casa Antúnez, halted at KP 41+800 when the driver noticed a drop in pressure in the train's automatic brake hose. The driver informed the CTC and proceeded to check the train, realising that two axles (32 and 33) of the wagon occupying the fourteenth place in the train set in the direction of travel were derailed and the second wagon axle had lost its right-hand axle box.

This train had given an alarm regarding the overheating of axle No 33 (2nd axle of wagon 14) when it passed through the hot axle detectors (HABD) of Olite, Tudela and Casetas. After passing through the detectors of Tudela and Casetas, the control centre stopped the train on the two occasions for the driver to check the axle box of axle 33. After checking the driver did not see any anomaly and continued travelling until reaching Casetas station, where he stopped to be relieved as scheduled. Subsequently, the train continued on its way and on passing through the HABD of Casetas it repeated the overheating alarm. Due to a malfunction of the numbering system of the Casetas HABD, it assigned the overheating alarm to train 81050 (which was travelling behind train 82658), so that the Saragossa Control Centre halted the 81050 and train 82658 (which was the one that had been reporting overheating alarms) continued on its way. As train 82658 was moving between Almudévar and Tardienta, the driver noticed a fall in pressure of the automatic brake hose (caused by the rupture of the hose on running derailed for the last 8 kilometres), stopping the train at KP 51+800, when he discovered that the fourteenth wagon of the train set was derailed on both axles, and that the second axle (No 33) of the wagon was missing the right-hand axle box.

Conclusion:

The accident was caused by the failure of the rolling stock due to the rupture of the right-hand hose of the second axle of the wagon occupying the fourteenth place in the train set, in the direction of travel, as a result of a temperature increase in the axle box due to seizure of the axle end bearing, having exceeded the maintenance deadline; together with a fault in the Casetas hot axle detector (HABD) which wrongly assigned the overheating alarm to another train.

Recommendations	
Recommend-ation	**61/12-1** To update the maintenance manuals for Transfesa Leks type car-carrier wagons for mainland transport, to match the period of the axle maintenance cycle with type R wagon maintenance operation.
Final recipient	Transfesa
Recommend-ation	**61/12-2** In agreement with Transfesa to set up the plan for adapting and installing type 65 axles on Leks type wagons with type 66 axles, monitoring its implementation as well as its result.
Final recipient	ADIF
Recommend-ation	**61/12-3** To study the feasibility of the stock data sheets of trains incorporating the number of axles for each wagon so that it is easy to identify the wagon with an axle with signs of overheating.
Final recipient	ADIF
Recommend-ation	**61/12-4** For the staff of the Miranda Control Centre involved in handling the overheating alarms covered in this report to undergo a refresher course in the management of hot axle alarms.
Final recipient	ADIF
Recommend-ation	**61/12-5** To review the operational functioning of the HABDs installed on the RFIG in order to prevent a possible misallocation of train numbers.
Final recipient	ADIF
Recommend-ation	**61/12-6** Recommendation No 1 of file 51/2012 is repeated: To study the suitability of making changes to the existing regulations on the management of alarms that occur in hot axle detector equipment.
Final recipient	Department of Railways (DGF)

File	Date	Line	Administrator	Operator	Place
0077/12	24/12/2012	700 Casetas-Intermodal Abando Indalecio Prieto	ADIF	Activa Rail	**Station**

Summary:

Freight train 97161 belonging to railway undertaking Activa Rail, travelling from Vicálvaro Clasificación (Madrid) to Bilbao Mercancías, was preparing to make its way through Lezama station by direct route.

The derailment occurred at the entrance to the station, at switching points 1, starting at the left-hand wheel of the first bogie of the wagon occupying the second place in the train set, in the direction of travel, said wheel falling outwards. The emergency brake was activated by rupture of the air hose, when the train was split, leaving the locomotive and the first wagon on the one side and the second wagon (derailed on its first bogie) on the other, together with the rest of the train set. The driver noticed that the emergency brake was activated and, after stopping the train, communicated with the CTC which authorised him to check the train set, corroborating the event.

Conclusion:

The derailment was caused by failure of the infrastructure. In the area of the derailment significantly out-of-tolerance cants and buckling were found, due to the poor quality of track combined with intense rainfall. The flange height of the derailed wagon's wheels could also have contributed, which had been turned 12 days previously, so that this was the minimum permitted.

Recommendations

Recommend-ation	**77/12-1** To intensify monitoring the track in the area of the accident until the implementation of the planned works.
Final recipient	ADIF

4.3.2.3. Level-crossing accidents

The number of level crossings on the General Interest Rail Network, as at 31 December 2012, is shown in the following table according to their type:

	ADIF	%	FEVE	%	Total	%
Class A: Protected only by fixed signals	1 067	44.46	639	65.40	1 706	50.52
Class B: Protected by light and sound signals	443	18.46	85	8.70	528	15.64
Class C: Protected with half-barriers, double half-barriers or barriers	453	18.88	181	18.53	634	18.77
Class D: Protected by a system of safety notices	17	0.71	0	0.00	17	0.50
Class E: Protected by crossing keeper	0	0.00	4	0.41	4	0.12
Class F: Exclusive to pedestrians or pedestrians and livestock	66	2.75	68	6.96	134	3.97
Class P: Private	354	14.75	0	0.00	354	10.48
Total	**2 400**	**100**	**977**	**100**	**3 377**	**100**

In 2012 only one accident was investigated at a level crossing. The event, despite only causing one minor injury, was the first subject of a preliminary study, its analysis clearly indicating the relevance of carrying out an investigation in order to make recommendations that will improve the safety of the level crossing in question.

		TYPE	PROTECTION CLASS	FILE No	LINE	PROVINCE	KP
ACCIDENT	ADIF	LEVEL CROSSINGS	A	0071/12	522 Manzanares-Ciudad Real	Ciudad Real	257,758

A summary is given below with the basic data, the conclusion and the recommendations that were made.

File	Date	Line	Administrator	Operator	Place
0071/12	29/10/2012	522 Manzanares-Ciudad Real	ADIF	Renfe Operadora	**Open track**

Summary:

The medium-distance passenger train 18081 travelling from Ciudad Real to Alicante, belonging to the railway undertaking Renfe Operadora, was running normally between the stations of Miguelturra and Pozuelo de Calatrava, in the province of Ciudad Real.

On approaching the class A level crossing at KP 257+758, the driver blew the whistle and engaged the emergency brake, without managing to avoid running into a road vehicle that had encroached on the rail track.

As a result of the road vehicle being struck, its driver was slightly injured.

Conclusion:	The accident arose from incursion onto the rail track by the road vehicle crossing the level crossing when train 18081 was passing.
Recommendations	
Recommend-ation	**71/12-1** As soon as possible, ask the road owner (Miguelturra Town Council) for the current figure for average daily traffic (ADT).
Final recipient	Department of Railways (DGF)
Recommend-ation	**71/12-2** When the current value for the ADT is known, whoever is responsible should proceed to adapt the characteristics of the level crossing to the provisions of the Ministerial Order of 2 August 2001 on the elimination and protection of level crossings.
Final recipient	Department of Railways (DGF)

4.3.2.4. Injury to persons caused by rolling stock in motion

In 2012 no accident due to a person being struck by rolling stock was investigated.

4.3.2.5. Fire

No fire-related accidents were investigated in 2012.

4.3.2.6. Other accidents

No other type of accident was investigated in 2012.

4.3.3. Incident

In 2012 nine incidents were investigated: five near collisions, one of runaway stock, two signal overruns and one broken axle. All but two took place on railway premises (station and halt).

The CIAF decided to investigate six of the twelve incidents that were reported in view of the fact that these events, if they had occurred in other circumstances, could have triggered an accident or serious accident.

With regard to those not investigated, two of them were motor vehicles falling on the track, events unconnected with railway operation.

The causes of all the incidents originated with the railway, the human factor being decisive in 77% of them (7). Their investigation gave rise to making eight recommendations, representing 24% of the total.

		TYPE	FILE No	LINE	PROVINCE	KP
INCIDENT	ADIF	NEAR COLLISION	0030/12	214 C.I.M. de Zaragoza-Cartuja	Saragossa	16,973
			0045/12	100 Madrid-Hendaye	Ávila	169,839
			0053/12	900 Madrid Chamartín-Madrid Atocha	Madrid	0,033
			0076/12	600 Valencia-San Vicente de Calders	Valencia	2,000
		SIGNAL OVERRUN	0040/12	426 Granada-Fuente de Piedra	Granada	88,008
		BROKEN AXLE	0064/12	200 Madrid-Barcelona	Huesca	25,100
	FEVE	RUNAWAY STOCK	0074/12	061 Gijón-Laviana	Asturias	49,700 36,915
		NEAR COLLISION	0028/12	024 Santander-Bilbao	Cantabria	545,009
		SIGNAL OVERRUN	0034/12	024 Santander-Bilbao	Cantabria	540,782

A summary is given below of each of these incidents, with their basic data, the conclusion and the recommendations that were made.

File	Date	Line	Administrator	Operator	Place
0028/12	18/04/2012	024 Santander-Bilbao	FEVE	FEVE	**Station**
Summary:	 Freight train 9860, travelling from Aranguren to Santander, and special service train SR507, from Santander to Gama, were running under normal conditions towards Heras station, where both trains were due to cross. For this, the CTC in Heras station provided a stop before entry signal E1 (Santander side) for train SR507 and an entry route up to signal S2/2 for train 9860 (Bilbao side). Train SR507 halted before entry signal E1 (Santander side) which indicated stop. For its part, freight train 9860 headed towards track 2 of the station, encountering advanced warning signal E'2 showing caution, and entry signal E2 showing a stop warning, passing through this at a speed of 40 kph. Train SR507 remained halted before signal E1. Train 9860 made its entrance into Heras station via track 2 and, at a distance less than that of exit signal S2/2 being in sight, the driver applied the emergency brake, without managing to avoid improperly overrunning the signal, or the first bogie forcing open switch A1, towards track 1 for the entry of train SR507. This caused a near collision between the two trains. There were no fatalities or injuries as a result of the incident.				
Conclusion:	The accident was caused by freight train 9860 improperly overrunning exit signal S2/2, indicating stop, due to failure to comply with the orders given by the signals to the driving staff.				
Recommendations					
Recommend-ation	**28/12-1** To analyse the feasibility of establishing a systematic procedure for monitoring and assessing compliance with maximum speeds by driving staff.				
Final recipient	FEVE				

File	Date	Line	Administrator	Operator	Place
0030/12	26/04/2012	214 C.I.M. de Zaragoza-Cartuja	ADIF	Logitren	**Siding**

Summary:

Logitren freight train 99561 and train 91182 belonging to Renfe Operadora were running under normal conditions and in opposite directions along a single track, towards Río Huerva station.

In order to enable the two trains to cross, the CTC in Río Huerva station had train 91182 stopped before entry signal E2 (Madrid side), and an entry route set up to signal S1/3 for train 99561 (Barcelona side).

Consequently, train 99561 heading towards the station found advanced warning signal E'1 showing caution and entry signal E1 showing stop. It continued its progress on track 3, but the driver did not notice in time that the next signal S1/3 was set to stop, and, although he used the emergency brake, he overran this, activating the emergency braking system to no avail. The train came to a stop 18 m after this signal, without managing to force open the access points to the main line.

For its part, travelling in the opposite direction, train 91182 passed the Río Huerva station's advanced warning signal E'2, indicating stop, and before it reached signal E2, indicating stop, signal S1/3 was overrun by train 99561, giving rise to a near collision.

Train 99561 reported to the CTC what had happened and the latter authorised it to back up along track 3 to release the points circuit and park there, not having forced the point open.

Conclusion:

The incident was caused by freight train 99561 improperly overrunning exit signal S1/3, indicating stop, due to failure to comply with the order given by the signal to the driving staff.

Recommendations

Recommend-ation

The measures adopted being considered adequate, no recommendations were made.

File	Date	Line	Administrator	Operator	Place
0034/12	09/05/2012	024 Santander-Bilbao	FEVE	FEVE	**Station**

Summary:

FEVE regional passenger train 6803 from Santander to Bilbao was travelling eight minutes late. That day, due to the delay of train 6803, it was decided to transfer its crossing with train 6414 to the station of Astillero. The daily crossing between the two was set in their timetables at Heras station.

Train 6803 was parked on Astillero's track 2, and after completing its commercial operations and the light signal was displaying the acronym OT (operations terminated), it started up, passing signal S1/2 (KP 540+178) indicating a stop warning (yellow), although this was interpreted by the driver in the cab as a caution signal (yellow-green). Next the driver increased the speed limit from 60 kph, set by acknowledgement of signal S1/2, to 80 kph.

Then the train entered a cut-and-cover tunnel, reaching a speed of 65 kph, and after the driver realised the state of signal S1/1L (KP 540+782) indicating stop (red) he pressed the emergency stop button, overrunning the signal by 17 metres.

Conclusion:

The incident was caused by passenger train 6803 improperly overrunning exit signal S1/1L, indicating stop, due to failure to comply with the orders given by the signals to the driving staff.

Recommendations

Recommend-ation	**34/12-1** In the training given to driving staff, to stress attitudes and behaviours that are a source of risk for traffic movement, emphasising strict compliance with FEVE's Rail Traffic and Signal Regulations.
Final recipient	FEVE
Recommend-ation	**34/12-2** To study the possibility of providing signal S1/1L with a warning beacon.
Final recipient	FEVE

File	Date	Line	Administrator	Operator	Place
0040/12	23/05/2012	426 Granada-Fuente de Piedra	ADIF	Renfe Operadora	**Station**

Summary:

Trains 13946 and 175, both belonging to Renfe Operadora, were running under normal conditions in opposite directions, along a single track, towards the station of Tocón-Montefrío, where they had a scheduled crossing. To allow the two trains to cross, the station traffic manager set a turnout entry route (track 3) for train 13946 (Granada side), for subsequently setting a passing route for train 175 (Fuente de Piedra side) along track 1. Train 13946 therefore headed towards the station, where advanced warning signal E'2 showed caution without the driver realising it. On approaching entry signal E2, the driver noticed that it indicated stop and activated the emergency brake, operating the traction-brake controller. He passed through entry switch number 2 at excessive speed, ran along track 3 and stopped there, after the first bogie forced open exit switch number 1 and did not manage to overrun exit signal S2/SM2.

The traffic manager witnessed train 13946 entering the station, observed the excess speed and introduced the stop signal manually; then, by radio telephone, he ordered train 175, which was travelling in the opposite direction and had not arrived at advanced warning signal E'1 indicating stop, to come to an immediate halt. The train stopped in front of the advanced warning signal. The driver of train 13946 reported to the traffic manager what had happened and the latter authorised him to back up to track 3 and park there.

Conclusion:

The incident was caused by freight train 99561 improperly overrunning exit signal S1/3, indicating stop, due to failure to comply with the order given by the signal to the driving staff.

Recommendations

Recommend-ation

40/12-1 To examine the feasibility of providing the mechanical signals of this station with ASFA beacons in order to mitigate traffic risks. In such an event, to have this measure applied to other similar premises.

Final recipient

ADIF

File	Date	Line	Administrator	Operator	Place
0045/12	15/06/2012	100 Madrid-Hendaye	ADIF	Renfe Operadora	**Station**

Summary:

Between the stations of Arévalo and Sanchidrián, with supplementary telephone blocking (BTS) being established for work on safety facilities, freight train 90602, travelling from Irún to Vicálvaro, belonging to the railway undertaking Renfe Operadora, had its entry set for Arévalo's track 4, in order to be overtaken by passenger train 18000, also belonging to Renfe Operadora, for which signal E'2 was displaying caution and signal E2 was indicating stop. The train headed towards track 4 to park there and halted in front of signal S2/4A. The traffic manager sent the driver a signal passing permit (BAR), to be able to pass this signal and move up to signal S2/4, since due to the length of the train its tail end would not be free of switch circuits numbers 2, 12 and 18. The traffic manager returned to his office and drew up the order and information bulletin (BOI) with the traffic conditions for supplementary telephone blocking on the Arévalo-Sanchidrián route. Then he sent the BOI to the driver of train 90602. Following this, train 90602 started up without having an exit route set and without receiving the order to go (start train) from the traffic manager. The Arévalo traffic manager immediately called the Control Centre (PM) in Madrid to stop train 90602, since freight train 82202, from As Gándaras to Pinto, was travelling under supplementary telephone blocking on its way between Arévalo and Sanchidrián, the same section that train 90602 had entered, both in the same direction of travel.

This caused a near front-to-end collision situation between the two trains. However, when train 90602 was stopped by the Control Centre, it was at a distance of 15 090 metres behind train 82202. The Control Centre halted train 90602 at KP 169+839, 798 metres from signal S2/4, and then authorised it to back up to Arévalo, when it finally came to a stop on track 4 in front of exit signal S2/4.

Conclusion:

The incident was due to human error by the driving staff of train 90602, by resuming travel without receiving the order to go (start train), in breach of Article 432 of the General Traffic Regulations.

Recommendations

Recommend-ation

The measures adopted being considered adequate, no recommendations were made.

File	Date	Line	Administrator	Operator	Place
0053/12	26/07/2012	900 Madrid Chamartín-Madrid Atocha	ADIF	Renfe Operadora	**Open track**

Summary:

Train 21232, travelling from Hortaleza to Villalba de Guadarrama, after stopping at the station of Recoletos, resumed its run towards the station of Atocha Cercanias. Train 4141 was also headed here in the opposite direction, coming from Alicante and bound for Gijón, after leaving the Atocha gauge changer.

At the time of the events, track circuit A6 was occupied due to a fault in the insulating joint, which prevented the exit signals towards the Recoletos side from opening. The trains were issued with the corresponding signal passing permit.

Thus, train 4141 was headed towards the station of Atocha-Cercanias without a stop being specified there, and was parked on track 4C with exit signal S1/4C, indicating stop. After the traffic official had sent the signal passing permit (BAR) to the driver of the train with a route along track I, the train started up and, as it passed exit signal S1/4C, train 21232, travelling in the opposite direction, passed the station's advanced warning signal E'2-2, indicating stop.

Train 4141 continuing on its way passed through crossing T10b, opening it up with the points being aligned towards track 2. Then it stopped, being confronted by train 21232 which was situated in front of entry signal E2-2 indicating stop.

There occurred a near collision between the two trains, facing each other at a distance of some 50 metres.

Conclusion:

The incident was due to human error on the part of the traffic official, by improperly sending the permission to pass exit signal S1/4C to train 4141, without its route being set correctly and without authorisation from the traffic manager.

Recommendations

Recommend-ation

The measures adopted being considered adequate, no recommendations were made.

File	Date	Line	Administrator	Operator	Place
0064/12	08/10/2012	200 Madrid-Barcelona	ADIF	Renfe Operadora	**Open track**

Summary:

Renfe Operadora train 15640, from Zaragoza Delicias to Canfranc, when travelling normally at a speed of 90 kph between the stations of Villanueva de Gállego and Zuera, came to a stop through the driver applying the service brake, on noticing that the vehicle was behaving abnormally and on looking through the rear-view mirror seeing that sparks were flying from the first bogie.

The driver informed the CTC and proceeded to reconnoitre the train, noting that the wheels of the second axle of the first bogie in the direction of travel were resting at an angle on the rail, since the body of the axle was broken.

Conclusion:

The incident stemmed from equipment failure, due to the second (driving) axle of the first bogie, in the direction of travel, being broken. The breakage occurred from an old surface crack caused by the axle having been in sporadic contact with an electrical element, which produced a series of electric arcs. Ruling out possible contact with a cable of the vehicle itself, the most reliable assumption is that the crack was caused by contact of the axle with a welding machine. This initial crack increased with fatigue until it caused catastrophic failure of the axle body.

Recommendations

Recommend-ation	**64/12-1** The measures adopted being considered adequate, it was recommended to examine the feasibility of extending them to vehicles in similar circumstances.
Final recipient	Department of Railways (DGF)

File	Date	Line	Administrator	Operator	Place
0074/12	06/12/2012	061 Gijón-Laviana	FEVE	FEVE	**Station**
Summary:	Train 4945, composed of FEVE's UTE 3532-6532, was parked on track 1 of Laviana, an end-of-line station where the train intended to stay overnight, to resume service the next day.  The driver, who had just finished the service, applied the parking brake and disabled and disconnected the units to leave them parked there waiting to start service the next day. At 02:35 am, the UTE started drifting onto the main line in the direction of Gijón. The train set drifted along the single track along a route where horizontal sections alternate with sloping sections, in the direction of travel. About 02:45 am, track workers who were carrying out night work between Sama and La Felguera reported to the control centre that they had seen these units travelling in the direction of Gijón and later returning in the direction of Laviana, finally stopping between the two stations, on a horizontal section at KP 36+915, 12.8 km from Laviana.				
Conclusion:	The incident stemmed from equipment failure due to the ineffectiveness of both the tyre and parking brake systems.				
Recommendations					
Recommend-ation	**74/12-1** To study the operation of the parking brake system of this vehicle series and of other series with a similar system. To assess their modification and changing the consistency of maintenance.				
Final recipient	Renfe Operadora (Metre Gauge Services – SAM)				
Recommend-ation	**74/12-2** To perform an audit on compliance of the maintenance cycles for rolling stock assigned to Metre Gauge Services (SAM).				
Final recipient	Renfe Operadora (Metre Gauge Services – SAM)				

Recommend-ation	**74/12-3** To provide the necessary measures for ensuring safety faced with the risk of rolling stock drifting in stations with characteristics similar to those of Laviana (start or end of travel and/or sloping in the parking area in the direction of the main line).
Final recipient	ADIF (Metre Gauge Network - RAM)

File	Date	Line	Administrator	Operator	Place
0076/12	21/12/2012	600 Valencia-San Vicente de Calders	ADIF	Renfe Operadora	**Station**

Summary:

Renfe Operadora passenger train 1112 travelling from Valencia-Joaquin Sorolla to Barcelona-Sants started off from track 9 with exit signal S1/9PA indicating stop and the driver acknowledged this by pressing [or acting upon] the ASFA push-button. Then he passed through switches 110, 108, T106 and T104 until reaching track II leading to the station of Valencia-Font de Sant Lluis, and upon seeing a fault appear on the cab's diagnostic screen (IDU), was trying to identify this.

Arriving at the warning beacon for signal E2B without altering speed he then overran the beacon for this signal which was indicating stop. The ASFA system emergency braking then came into operation, with the train crossing into the next blocking section occupied by train 10596, travelling in the same direction and with an entry route set for track 6 of the station of Valencia-Font de Sant Lluis. This caused a near collision between the two trains.

Conclusion:	The incident was caused by passenger train 1112 improperly overrunning entry signal E2B, indicating stop, due to failure to comply with the order given by the signal to the driving staff.
Recommendations	
Recommend-ation	The measures adopted being considered adequate, no recommendations were made.

5. CAUSES OF INVESTIGATED EVENTS

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

ATTRIB-UTED CAUSE	CLASSIFICATION	NET-WORK	TYPE	CAUSE	TOTAL EVENTS	TOTAL VICTIMS (SI+MI)
RAILWAY	ACCIDENT	ADIF	Collision (object)	HUMAN ERROR: Failure to comply with regulations. Lack of attention	1	11
				HUMAN ERROR: Failure to comply with procedures	1	0
			Collision (trains)	HUMAN ERROR: Failure to comply with regulations	1	27
			Derailment	INFRASTRUCTURE FAILURE: Incorrect arrangement of track section	1	0
				FAILURE OF ROLLING STOCK: Failure in the gauge change devices	2	0
				COMBINED FAILURE OF ROLLING STOCK AND HUMAN ERROR: Split hose/ Failure to comply with procedures	1	0
				COMBINED FAILURE OF ROLLING STOCK AND FACILITIES: Split hose/ HABD (hot axle detector) fault	1	0
				INFRASTRUCTURE FAILURE: Out-of-tolerance cant and buckling	1	0
		FEVE	Collision (object)	INFRASTRUCTURE FAILURE: Fallen tree on the track	1	0
			Collision (trains)	HUMAN ERROR: Failure to comply with regulations	1	9
			Derailment	INFRASTRUCTURE FAILURE: Deficient track alignment and levelling. Ballast contamination	1	0
				HUMAN ERROR: Failure to comply with regulations	1	0
	INCIDENT	ADIF	Near collision	HUMAN ERROR: Failure to comply with regulations	4	0
			Signal overrun	HUMAN ERROR: Failure to comply with regulations	1	0
			Broken axle	FAILURE OF ROLLING STOCK: Crack	1	0
		FEVE	Near collision	HUMAN ERROR: Failure to comply with regulations	1	0
			Runaway stock	FAILURE OF ROLLING STOCK: Ineffectiveness of braking systems	1	0
			Signal overrun	HUMAN ERROR: Failure to comply with regulations	1	0
TOTAL RAILWAY					**22**	**47**
THIRD PARTIES	ACCIDENT	ADIF	Level crossings	HUMAN ERROR: The victim did not look out for the arrival of the train	1	1
THIRD PARTIES TOTAL					**1**	**1**
GENERAL TOTAL					**23**	**48**

Of all of the investigated events (accidents and incidents), the railway system was the source of 96% of them (22 out of 23) and 98% of the victims (serious and minor injuries). The only one of the events investigated whose cause was attributable to third parties was the level crossing accident which caused one minor injury.

61% of the events (fourteen out of the total) were due to human error (93% by railway staff and 7% by third parties), this being the sole cause in thirteen of them and in one combined with failure of the rolling stock.

The remaining events (39%) were due to failures in the infrastructure and/or the rolling stock.

6. COMPARATIVE ANALYSIS

The tables below show the data on the total number of events investigated (accidents and incidents), the victims (fatalities, serious and minor injuries) and the recommendations made in each of the final reports that resulted from investigation over the last five years.

As can be seen in the first table, the number of events investigated during 2012, as well as their type, show that the CIAF continues to apply the approach which, since 2009, has been used to decide on the investigation of an event: the recommendations that may be issued for the improvement of railway safety. Thus, collisions, derailments and near collisions are the types of events that have been investigated most, since normally their cause has its origin in the rail system and not in the behaviour of third parties which is the cause of most accidents classified as injury to persons caused by rolling stock.

Similarly, the number of recommendations made is based on the same approach: in 2012, almost 50% of the recommendations were made in the reports that investigated derailments.

INVESTIGATED EVENTS 2008-2012

	YEAR	2008			2009			2010			2011			2012			GENERAL TOTAL
	NETWORK / TYPE	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	
SERIOUS ACCIDENT	Collision	2		**2**			**0**	1		**1**			**0**			**0**	**3**
ACCIDENT	Collision		1	**1**	4	1	**5**	1		**1**	3		**3**	3	2	**5**	**15**
	Derailment	2		**2**	3	1	**4**	6	2	**8**	13	1	**14**	6	2	**8**	**36**
	Level crossings	14		**14**	12	4	**16**	4	3	**7**	1		**1**	1		**1**	**39**
	Injury to persons	33	2	**35**	8		**8**	4		**4**	1		**1**			**0**	**48**
INCIDENT	Near collision	2	1	**3**	7	2	**9**	6	1	**7**	3		**3**	4	1	**5**	**27**
	Runaway stock			**0**			**0**			**0**		1	**1**		1	**1**	**2**
	Badly prepared route			**0**			**0**			**0**	1		**1**			**0**	**1**
	Signal overrun			**0**			**0**			**0**			**0**	1	1	**2**	**2**
	Broken axle			**0**		1	**1**			**0**			**0**	1		**1**	**2**
	Total	**53**	**4**	**57**	**34**	**9**	**43**	**22**	**6**	**28**	**22**	**2**	**24**	**16**	**7**	**23**	**175**

VICTIMS OF INVESTIGATED EVENTS 2008-2012 (FATALITIES, SERIOUS AND MINOR INJURIES)

	YEAR / NETWORK / TYPE	FA/ SI/ MI	2008			2009			2010			2011			2012			GENERAL TOTAL
			ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	
SERIOUS ACCIDENT	Collision	**FA**	2		**2**			**0**	1		**1**			**0**			**0**	**3**
		SI			**0**			**0**			**0**			**0**			**0**	**0**
		MI			**0**			**0**			**0**			**0**			**0**	**0**
ACCIDENT	Collision	**FA**			**0**			**0**	1		**1**			**0**			**0**	**1**
		SI			**0**			**0**			**0**			**0**	1		**1**	**1**
		MI			**0**			**0**			**0**	18		**18**	37	9	**46**	**64**
	Derailment	**FA**			**0**			**0**			**0**			**0**			**0**	**0**
		SI			**0**			**0**			**0**			**0**			**0**	**0**
		MI			**0**			**0**			**0**	1		**1**			**0**	**1**
	Level crossings	**FA**	15		**15**	12	4	**16**	5	3	**8**			**0**			**0**	**39**
		SI			**0**		1	**1**	1		**1**			**0**			**0**	**2**
		MI			**0**	2		**2**			**0**	2		**2**	1		**1**	**5**
	Injury to persons	**FA**	33	2	**35**	8		**8**	14		**14**	1		**1**			**0**	**58**
		SI	1		**1**			**0**	10		**10**			**0**			**0**	**11**
		MI			**0**			**0**	12		**12**			**0**			**0**	**12**
	Total		**51**	**2**	**53**	**22**	**5**	**27**	**44**	**3**	**47**	**22**	**0**	**22**	**39**	**9**	**48**	**197**

RECOMMENDATIONS 2008-2012

	YEAR / NETWORK / TYPE	2008			2009			2010			2011			2012			GENERAL TOTAL
		ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	ADIF	FEVE	TOTAL	
SERIOUS ACCIDENT	Collision	1		**1**			**0**	3		**3**			**0**			**0**	**4**
ACCIDENT	Collision		1	**1**	6	1	**7**	1		**1**	1		**1**	6	1	**7**	**17**
	Derailment	5		**5**	3	1	**4**	18	3	**21**	17	1	**18**	13	3	**16**	**64**
	Level crossings	7		**7**	2		**2**	7	6	**13**	1		**1**	2		**2**	**25**
	Injury to persons	19	5	**24**	5		**5**	4		**4**	3		**3**			**0**	**36**
INCIDENT	Near collision	7		**7**	14	4	**18**	1	2	**3**	3		**3**		1	**1**	**32**
	Runaway stock			**0**			**0**			**0**	1		**1**		3	**3**	**4**
	Badly prepared route			**0**			**0**			**0**		3	**3**			**0**	**3**
	Signal overrun			**0**			**0**			**0**			**0**	1	2	**3**	**3**
	Broken axle			**0**		3	**3**			**0**			**0**	1		**1**	**4**
	Total	**39**	**6**	**45**	**30**	**9**	**39**	**34**	**11**	**45**	**26**	**4**	**30**	**23**	**10**	**33**	**192**

7. RECOMMENDATIONS

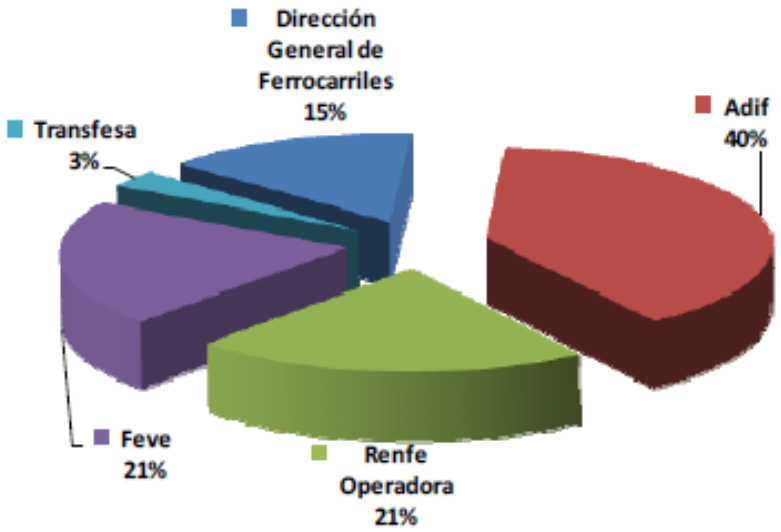
7.1. Recommendations made in 2012

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 (Department of Railways - DGF) and the European Railway Agency (ERA) in addition to the bodies affected.

Of the 23 investigations initiated on events in the RFIG in 2012 all were completed on the publication of this report, and in 16 of them (11 on accidents and 5 on incidents) the published final report contains recommendations.

In total, the Commission made 33 recommendations, resulting in an average of 1.43 recommendations per investigated event, somewhat higher than the previous year in which with one more event investigated there were two fewer recommendations made.



Adif	ADIF
Feve	FEVE
Dirección General de Ferrocarriles	Department of Railways

7.2. Measures adopted as a result of the recommendations made

Royal Decree 810/2007 of 22 June approving the Regulations concerning traffic safety on the General Interest Rail Network specifies in Article 25 that the annual report of the Rail Accident Investigation Commission (CIAF) must include, in addition to investigations carried out and recommendations made that year (set out in previous sections), any measures which, where appropriate, have been adopted in accordance with the recommendations made previously.

This section therefore includes information received at the CIAF, between the publication of the previous report (September 2012) and the present one (September 2013), regarding measures adopted by the final recipient and reported to the Department of Railways (DGF), and which correspond to recommendations made since the start-up of the CIAF (December 2007).

This information, which is listed in the tables below, has been provided by the DGF which, as the National Railway Safety Authority, is responsible for monitoring the recommendations made by the CIAF, assessing the measures adopted by the final recipients for their implementation, and reporting to this Commission.

Thus, based on the information received, the final recipients have so far conducted actions (adopted measures) for the implementation of 159 of all of the recommendations issued by the CIAF since its creation (194), which has led to the DGF considering the degree of compliance of 135 of these as satisfactory, of which 2 are from 2007, 36 from 2008, 36 from 2009, 39 from 2010, 16 from 2011 and 6 from 2012.

File	**0009/09**
Final recipient	**FEVE (Renfe Operadora - SAM[1])**
Recommendation of the CIAF:	
9/09-2 To carry out an audit for assessing the degree of compliance with established procedures for recording communications (written telephone messages).	
Recommendation of the CIAF:	
9/09-3 To lay stress on strict compliance with the rules in operational calls, as well as on paying proper attention to driving, especially when travelling in abnormal circumstances.	
Measures adopted by the final recipient:	**Date of communication: 17/07/2013**
Renfe informed the DGF of actions to raise awareness of compliance with the rules of communication and with regard to events caused by human error in driving, in response to similar recommendations at other points of the network (not metre gauge). Given that the DGF is satisfied that Renfe is in the process of integrating the metre gauge network into the overall safety management system procedures, the DGF reminded them of the desirability of extending these actions to the metre gauge network.	

[1] SAM: metre gauge service. FEVE has been defunct since 1 January 2013. Thus, ADIF is responsible for the infrastructure and Renfe Operadora is responsible for service provision.

File	0011/09
Final recipient	**Department of Railways (DGF)**
Recommendation of the CIAF:	
11/09-3 To examine the possibility of amending the regulations so that trains with these characteristics (track machinery without the ASFA system or safety recorder) when running on track with open traffic either have to be towed by tractor units fitted with the aforementioned systems or run protected by occupation blocking.	
Measures adopted by the final recipient:	**Date of communication: 17/07/2013**
The current regulations for vehicle authorisation, the *Technical Specifications for the Approval of Railway Rolling Stock: Auxiliary Rolling Stock, in its point 4.2.3.1. Driving position equipment*, for categories E and G provides the following: '*(…) Those vehicles that are not equipped with one of these systems may only travel outside the work area as towed stock.*' That is to say, that the general rule already prescribes that vehicles without ASFA may only travel as towed stock. From our point of view, we regard compliance with the recommendation issued by the CIAF as sufficient.	

File	0062/09
Final recipient	**Municipality of Orbita**
Recommendation of the CIAF:	
62/09-1 To adapt the road signs to the provisions of the Order of 2 August 2001, implementing Article 235 of the Legal Regulations Governing Land Transport, regarding the elimination and protection of level crossings.	
Measures adopted by the final recipient:	**Date of communication: 14/01/2013**
This Municipality, without assuming any liability for any damage that occurred, will proceed with placing appropriate vertical signs, requesting that the DGF proceed with installing a traffic light for regulating traffic, given that the traffic volume is very high.	

File	**0018/10**
Final recipient	**Dimetronic**
Recommendation of the CIAF:	
18/10-3 The undertaking's Safety/Quality Management system procedures should be reviewed regarding new and modified safety facilities, and in cases of rail traffic maintenance, in order to prevent similar situations to those of the event. In these cases the duties and responsibilities of the undertaking's head of commissioning should be clarified, as an expert on the technical risks arising from these situations. The undertaking's safety teams should check that the operations of verifying/validating systems or subsystems to be installed or of the modification of existing ones are effectively carried out. Furthermore, this safety team must approve field operations prior to commissioning. A documentary record must be kept of all the foregoing (safety case) before the commissioning of the facility is authorised, whether it is new or a modification of an existing one. All this is adapted in detail to the specific project in question.	
Measures adopted by the final recipient:	**Date of communication: 26/04/2013**
Technical Instruction INIG-0013 has been included in the internal procedures PRCA_CT-0002 (Contracts, Works and Facilities) in paragraph 2.17 (Testing and Commissioning), and PRCA_IG-0001 (Design and Development of Track Systems Applied Engineering) in its paragraph 3.3.8.4.2 (Task 18: Commissioning/Integration of HW/SW). This technical instruction systematically covers the operations to be carried out before and during the Commissioning tests, which commissioning requires: the description of activities to be performed during commissioning; analysis of the impact on the facility where the commissioning is taking place; definition of the operating conditions during implementation of the commissioning tasks; determination of the final state of the facility after commissioning. It should be noted that this Technical Instruction updates and supplements the operations undertaken so far during commissioning. As was requested of us, a case study was undertaken, based on '*Commissioning of ENCE BARCELONA SANTS Upgrade on the BARCELONA-FIGUERAS line*' which was conducted on the night of 21 to 22 March 2013.	

File	**0049/10**
Final recipient	**Department of Railways (DGF)**
Recommendation of the CIAF:	
49/10-2 The authorisation for setting up a temporary works crossing must include the necessary protection and regulating measures according to the particular characteristics of the work and of the affected line, based on the risk analysis submitted by the infrastructure manager in its application for authorisation. The protection measures must be adapted to any of the classes of protection laid down in the Order of 2 August 2001 relating to level crossings.	
Measures adopted by the final recipient:	**Date of communication: 17/07/2013**
This Department found that ADIF had developed a *'Special procedure for setting up/closing temporary level crossings'* which is based on a risk analysis and which is submitted by ADIF to the DGF in its application for authorisation to set up a temporary works crossing.	

File	**0015/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
15/11-1 Monitoring the behaviour of the ASFA beacon at the base of signal 2268 (prior to the Flaçà E'2 advanced warning signal) with the object of detecting any malfunctions in it.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
The behaviour of the ASFA beacon at the base of signal 2268 (prior to the Flaçà advanced warning signal E'2) was monitored without detecting any anomalous behaviour in the interval of time that had elapsed since the incident.	

File	**0023/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
23/11-1 To institute the necessary measures for communications with driving cab staff to take place in accordance with regulations, in order to avoid possible distractions, especially when running in degraded conditions.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
After the recommendation was studied, it could be agreed that both organisations, ADIF and Renfe, should conduct control procedures for monitoring that communications comply with the Regulatory Standards, by means of their inspection plans and safety surveys.	
Final recipient	**Renfe Operadora**
Recommendation of the CIAF:	
23/11-1 To institute the necessary measures for communications with driving cab staff to take place in accordance with regulations, in order to avoid possible distractions, especially when running in degraded conditions.	
Measures adopted by the final recipient:	**Date of communication: 24/04/2012**
With regard to the event at Los Gavilanes it should be clarified that the communication with the driving personnel, referred to in the official report of the Commission, was made from the ADIF Control Centre. On 6 July 2011 it was agreed that the Passenger and Freight Departments would establish action guidelines to prevent management centres from communicating with driving staff while the staff were driving. Accordingly, the Department of Production Services and Freight Terminals and Logistics as well as the Department of Passenger Operations have produced a briefing note for all management centres with the following text: *'To avoid distractions for driving staff, especially when driving in degraded conditions, communications with the drivers of trains in service must strictly comply with the regulations. Other communications should be made with the train stopped.'*	

File	**0025/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
25/11-1 To explore the possibility of improving the visibility of Rubí station exit signal S1/1.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
Barcelona Maintenance Section Management staff made a visit in order to observe the possibilities of improving the viability of the signal mentioned above, given that visibility of the signal may be considered deficient from the commuter train stopping place.	
Final recipient	**ADIF**
Recommendation of the CIAF:	
25/11-2 To explore the possibility of including in the operating program of the Rubí station interlock conditions in the gauge changers and other switches and crossings such that, in establishing routes, account is taken of the orientation of these switches and crossings, when they follow a signal and may be affected by a possible overrun of that signal.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
Currently there are two possibilities whose feasibility is being studied: the installation of an exit indicating signal or altering the location of the signal by the competent bodies. The warning beacon was placed in service for the European standard gauge (at the time of the accident only the Iberian gauge was in operation). Traffic Safety Section Management was consulted on the need to take any additional measure.	

File	0028/11
Final recipient	**ADIF**
Recommendation of the CIAF:	
28/11-1 That all works authorisations containing special requirements relating to proceedings which in some way could affect the safe movement of trains should include a section that clearly lays down that special instructions are addressed in the initial health and safety coordination meeting (which takes place before the start of the works). The representatives of the infrastructure manager at that meeting will read the special instructions contained in the authorisation and they will be discussed by those present, so as to clarify their scope and clear up any possible doubts that such instructions might raise. All meeting attendees, and especially the representatives of the party executing the work (project management, works management, etc.), must acknowledge their cognisance of these and this should be recorded in the minutes of the aforementioned meeting, which will be signed by all the attendees.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
Follow-up to recommendations - D. High-Speed Network Operations and Engineering: Appropriate orders have been given from the High-Speed Network Operations and Engineering Department to the effect that all decisions on works authorisations should include the requirement to draw up minutes of the meeting between the ADIF Maintenance Base manager and the company performing the work to examine all the instructions set out in the decision related to traffic safety. Follow-up to recommendations - D. Conventional Network Operations and Engineering: In the coordination meetings prior to the start of the works the contracting company has to be informed of its own risks emanating from the ADIF works centre and to which they are exposed by undertaking the works there, as well as the regulatory preventive measures to be fulfilled for preventing them. Despite these risks and preventive measures being referred to in the Safety Plan approved for the work, it is reminded of its due compliance and any possible doubts are clarified. The minutes of the meeting are always drawn up and signed by all the attendees as evidence that they are aware of the foregoing.	

File	0032/11
Final recipient	**ADIF**
Recommendation of the CIAF:	
32/11-1 To examine the feasibility of replacing the entire stretch of wooden sleepers with others made of concrete or, failing this, replacing those in poor condition with others of the same material.	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
A project has been drawn up for replacing wooden sleepers with concrete over a stretch of four kilometres for a sum of EUR 847 000, currently pending approval and budgetary allocation.	

File	0036/11
Final recipient	**ADIF**
Recommendation of the CIAF:	
36/11-1 The weekly work log must contain the specific activities to be carried out and the machinery planned to be used, and as well as access to it.	
Recommendation of the CIAF:	
36/11-2 To examine the feasibility of increasing track work inspection visits by the staff responsible for safety.	
Recommendation of the CIAF:	
36/11-3 To stress the regulatory aspects of track work in the training of those in charge of works.	

Measures adopted by the final recipient:	**Date of communication: 23/10/2012**

Follow-up to recommendations - D. High-Speed Network Operations and Engineering:

Orders have been given from the High-Speed Network Operations and Engineering Department to all high-speed maintenance area management that when drawing up work minutes they should include the machinery that is expected to be used and the access for this. The human resources manager of the HS Network Operations and Engineering Department has also been ordered to stress the regulatory aspects of track work in training courses for those responsible for the work.

Follow-up to recommendations - D. Conventional Network Operations and Engineering:

The points of the minutes are drawn up in accordance with the guidelines of the Traffic Safety Department. In addition, the regulation documents (instructions, notices, etc.) are drawn up to raise awareness of the regulatory requirements and to inform the participants when vehicle access to the track occurs at a specified kilometre point. Inspection visits are planned for the corresponding area and, according to the complexity of the work, the specific regulatory procedures are analysed with the local managers, taking into account the particular characteristics of the equipment, the area affected, the work to be performed, the existing blocks and the regulation documents issued.

File	**0040/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
40/11-1 To examine the feasibility of including track 7 and the routes to and from it with traffic path processing in the Granollers-Centre station interlock.	
Measures adopted by the final recipient:	**Date of communication: 14/12/2012**
The planned operation consists in raising the switch gear of switch 33, removing point block 33, installing a track circuit on track 7 and renaming exit signal S2/7-9 to S2/7. The budget for implementing this has been roughly estimated at EUR 100 000. It is currently awaiting budgetary allocation.	

File	**0047/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
47/11-3 To assess the utility of intensifying the training of traffic managers who manage lines equipped with a third rail, with regard to the knowledge of facilities for which they are responsible and in compliance with Notice No 43 of the ADIF Traffic Safety Department (DSC).	
Measures adopted by the final recipient:	**Date of communication: 23/10/2012**
Specific training courses were held on the third rail, supplemented by a simulator program provided by the Project Management Department, through which the theoretical aspects explained in the course were expressed in a practical way. In addition several visits were made to the third rail facilities of Cerdanyola University station.	

File	0050/11
Final recipient	**FEVE (Renfe Operadora – SAM[2])**
Recommendation of the CIAF:	
50/11-1 In the training given to driving staff, to stress attitudes and behaviours that are a source of risk for traffic movement, emphasising strict compliance with FEVE's Rail Traffic Regulations.	
Measures adopted by the final recipient:	**Date of communication: 11/04/2013**
It should be noted that the event occurred on the now defunct FEVE. Starting on 1 January 2013, work has been done on implementing the protocol laid down in the Renfe Operadora Safety Management system for events caused by human error in driving. In general, this protocol applies the following measures to offenders: withdrawal from duty; testing for alcohol and drug addiction; psychophysical examination at an approved Medical Centre; development of a personalised programme at the Renfe approved Training Centre, which includes: passing through a simulator, retraining courses and being monitored in a cab by an instructor; returning to duty after passing the psychophysical tests with a favourable assessment report; periodic monitoring of driving behaviour by the instructor. In addition to the above measures, each event is analysed by the Office dedicated to human error management, whose mission is to identify the causes of failure in driving and the implementation of appropriate preventive measures. In the specific field of Training it should be mentioned that the timetable used in retraining courses includes a module designed by the Traffic Safety Department, a module that addresses the analysis of the most frequent driving risks along with recommendations for avoiding these risks. With regard to the mitigation measures introduced, to indicate that the Annual Safety Plan includes in-cab monitoring and analysis of train logs to detect inappropriate driving practices. Finally, given that the exit signal from Astillero has been overrun on several occasions and that the visibility is restricted to 210 m, a distance that, with the driver's perception and reaction time and the response time of the brake equipment, is reduced to 170 m, Renfe considers it of the utmost importance to install a signal warning beacon, as recommended in the report of the CIAF.	

[2] SAM: metre gauge service. FEVE has been defunct since 1 January 2013. Thus, ADIF is responsible for the infrastructure and Renfe Operadora is responsible for service provision.

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Measures adopted by the final recipient:	**Date of communication: 05/06/2013**

In reply to the request for information on the measures that this company has been implementing in response to signal overruns recorded at the station of Astillero (files 0050/11 and 0034/12) belonging to the metre gauge network, we are providing details of the actions undertaken for complying with the recommendations made:

*To recommend to the Santander driving staff, through the driver supervisors and safety staff, the need to pay strict attention to Astillero signal indications, especially on the exit routes on the Bilbao side.

*To advise the Santander driving staff through the driver supervisors and safety staff on how to apply Instruction C43/2011.

*To check, through in-cab monitoring and analysis of train logs, that the recommendation made has been complied with and that Instruction C43/2011 has been properly applied.

*With regard to the issue of new line qualifications and retraining for certificate holders, inclusion of the Astillero station as a relevant point on the training routes required from drivers.

It should be pointed out that the response provided in our written communication of 10 April was confined to the general recommendation made by the Rail Accident Investigation Commission (CIAF): *'In the training given to driving staff, to stress attitudes and behaviours that are a source of risk for traffic movement, emphasising strict compliance with FEVE's General Rail Traffic and Signal Regulations'*. Renfe Operadora shares the approach developed by that Department regarding the station of Astillero and for this reason insists that, in addition to the measures undertaken by Renfe, all those preventive measures should be adopted that help to mitigate the risk of overrun, and specifically the second recommendation made by the CIAF (*'To study the possibility of providing exit signal S1/1L with an ASFA warning beacon').* In view of the limited visibility of the signal that was overrun, it is important to give the driver advance notice of the signal order through reading a warning beacon. In the opinion of our technicians it is feasible to install such a beacon.

File	**0061/11**
Final recipient	**ADIF**
Recommendation of the CIAF:	
61/11-1 That the training session and refresher course given to the Chamartín manager be extended to those responsible for work on the rest of the network.	
Measures adopted by the final recipient:	**Date of communication: 14/12/2012**
Awareness-Raising Training Days were given to staff on the accidents and incidents that the CIAF recommended and on other incidents of a local nature. In the Operations Centre Sub-Division, the area where the incident took place, 140 people have attended so far this year, including foremen, traffic managers, both from stations and control centres, training staff and supervisors, as well as those involved in scheduling and compiling work records. A further seven days are planned with an expected attendance of 160 persons from these groups. The refresher training programme expressly deals with Articles 140, 271, 341 and 343 of the General Traffic Regulations referred to in the CIAF report. The refresher courses to be given in 2013 are expected to stress on-site checks. A training course is going to be planned directed at traffic safety instructors in order to clarify concepts, clear up doubts and set common goals in next year's refresher courses. Colour coding has also been introduced in existing interlocks, to minimise possible human error when making connections. The new installations will require components that physically prevent similar errors being committed.	

File	**0063/11**
Final recipient	**Renfe Operadora**
Recommendation of the CIAF:	
63/11-1 To set up special monitoring of the gauge changing locking/unlocking mechanism on BRAVA axles until the planned modification to its fastening (welding) is made.	
Measures adopted by the final recipient:	**Date of communication: 14/01/2013**
Every 5 000 kilometres, coinciding with ES type overhauls, preventive maintenance inspections are carried out which, under their Maintenance Plan, include checking, among other elements of the gauge changing locking/unlocking mechanism, the state of the safety device, making sure that both the shoes (and their pad) and the lever are in good condition and replacing the damaged elements where necessary. Every 30 000 kilometres, coinciding with V1 type overhauls, preventive maintenance inspections are carried out which, under their Maintenance Plan, include checking, among other elements of the gauge changing locking/unlocking mechanism, and in addition to those mentioned in ES servicing, the operation of the lock and the correct tightness of the screws securing the housing bottom and cover, replacing the damaged elements where necessary. Renfe holds periodic meetings with the manufacturer of the BRAVA bogie (CAF), with the maintainer (ACTREN) and with Renfe Manufacturing and Maintenance, in which all matters relating to these bogies are followed up. As a further new measure it was decided that the BRAVA bogie Maintenance Plan and its Technical Maintenance Standard should incorporate the operation of using gauges to inspect the clearance between the lever bracket and the housing in each V1 type service, so that if the clearance exceeds 0.1 mm the lever support and fastening screws are replaced. In addition, audible warning devices for the state of the locks are to be installed for the driver and two employees will be present in the changers for controlling the gauge changes. The combination of information in the cab and the activity of on-site technical staff ensures passenger safety on the main line after leaving the changer. Secondly, the design of the axle interlock device eliminates the risk of accidental unlocking on the main line. Renfe believes that the measures described meet the need for special monitoring of the gauge changing locking/unlocking mechanism of the BRAVA axles, and considers the actions outlined as sufficient.	

File	**0004/12**
Final recipient	**FEVE**
Recommendation of the CIAF:	
04/12-1 To stress compliance with regulations by driving personnel, especially with Article 2.27.00 Chapter II 'Train Traffic' of the Rail Traffic Regulations.	
Measures adopted by the final recipient:	**Date of communication: 17/12/2012**

FEVE has carried out the provisions laid down in operating procedures in the event of rail traffic incidents, which provide for the adoption of measures for ensuring traffic safety in the area affected by the incident, the drafting of notices to the departments and entities involved, the authorisation of alternative means of transport for passengers and the restoration of service until it returns to normal, in addition to starting the work of investigating the incident.

Given the presumption of human error, a statement was taken from the drivers of the two trains involved, as well as from the Traffic Manager responsible for traffic in the section. The driver who might have breached the rules was tested for alcohol and drugs and data was taken from recorders in the train units, the CTC and other normal inquiries. When responsibility for the events was confirmed to be that of the driver in question, the disciplinary case opened on the driver ended with him receiving a penalty for very serious negligence, being suspended from duty and fined 10 days' salary, which became effective from 12 to 21 May 2012.

During the investigation of the case, and as a precautionary measure, he was assigned to shunting duties on the siding at the El Berrón depot, not going out with passenger trains on the main line. This situation prevailed until 22 May, at which date he was given practical training for two weeks accompanied by driver supervisors who declared him fit for work.

In addition he attended the course given in Asturias for drivers, which included the following topics: blocking systems, single-operator train traffic and abnormalities and faults in engine equipment. The training method used driving simulators.

File	**0005/12**
Final recipient	**FEVE (ADIF - RAM[3])**
Recommendation of the CIAF:	
05/12-1 To restore the values of the geometric parameters of the track in the section where the accident occurred in accordance with those of track standard NFI 001 for safe train travel.	
Measures adopted by the final recipient:	**Date of communication: 26/07/2013**
The maintenance section, once the stock was removed, proceeded to restore the geometric parameters of the track, that same night. In addition, during the week of 16 January 2012 they continued with other maintenance operations on all the tracks in this area to ensure adequate conditions.	
Final recipient	**FEVE (ADIF - RAM)**
Recommendation of the CIAF:	
05/12-2 To examine the feasibility of cleaning and improving the superstructure of the track in the area of the derailment, in order to prevent premature deformations.	
Measures adopted by the final recipient:	**Date of communication: 26/07/2013**
In 2012 a project included in the RAM investment plan for 2013 for eliminating the root cause of this incident will be put up for tender in the second half of 2013. The deadline for implementation is two months once the contract has been awarded.	
Final recipient	**FEVE (ADIF - RAM)**
Recommendation of the CIAF:	
05/12-3 When track inspection (auscultation) is performed and areas are detected with out-of-tolerance parameter values, this being significant, to take action immediately in those areas of the layout where maintenance is being carried out.	

[3] [3] RAM: metre gauge network. FEVE has been defunct since 1 January 2013. Thus, ADIF is responsible for the infrastructure and Renfe Operadora is responsible for service provision.

Measures adopted by the final recipient:	**Date of communication: 26/07/2013**
Two auscultations are performed per year on the whole metre gauge network, which serve as the basis for decision making and prioritisation of maintenance operations during the year. Specifically, the dates on which the latest two auscultations were carried out at this point were 17/12/12 and 18/05/13.	

File	**0007/12**
Final recipient	**Renfe Operadora**
Recommendation of the CIAF:	
07/12-1 To examine the feasibility of preventing speed being pre-set when running on sight.	
Measures adopted by the final recipient:	**Date of communication: 14/05/2013**
The study highlighted the inappropriate use of pre-set speeds when wrongly used as a substitute for brake equipment, by means of successive applications of decreasing pre-set speeds, or when travelling in running conditions where there is no constant reference speed. Accordingly, SC Notice No 37 was published on 1 February 2013, restricting the use of pre-set speed and specifying driving in manual in the following cases: *when travelling under conditions of running on sight *during shunting *on exit routes and parking routes *on approaches to signals indicating stop *when travelling with successive signals indicating an advance warning to stop or proceed with caution Compliance with this standard is checked during the inspection activities referred to: in-cab monitoring and analysis of train logs. With the implementation of this measure Renfe Operadora regards the above recommendation as being met.	

File	**0028/12**
Final recipient	**FEVE (Renfe Operadora - SAM[4])**
Recommendation of the CIAF:	
28/12-1 To examine the feasibility of establishing a systematic procedure for monitoring and assessing compliance with maximum speeds by driving staff.	
Measures adopted by the final recipient:	**Date of communication: 10/04/2013**
It should be noted that the event occurred on the now defunct FEVE. Starting on 1 January 2013, work has been done on implementing the protocol laid down in the Renfe Operadora Safety Management System for events caused by human error in driving; in this specific case the following Safety Management System documents apply: - General Inspection Procedure - Circular Decision No 1 - Special Procedure for Testing Safety Recorders - Annual Safety Plan As a result of implementing the aforementioned documents, the Annual Safety Plan in 2013 provides for 500 speed log checks for the driving staff of the Metre Gauge Network so that each offending driver is inspected at least twice a year. In addition, 150 in-cab monitoring inspections will be carried out on regular trains and 50 on shunting, during which staff will be instructed on the risks arising from excess speed.	

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[4] SAM: metre gauge service. FEVE has been defunct since 1 January 2013. Thus, ADIF is responsible for the infrastructure and Renfe Operadora is responsible for service provision

File	**0034/12**
Final recipient	**FEVE (Renfe Operadora - SAM[5])**
Recommendation of the CIAF:	
34/12-1 In the training given to driving staff, to stress attitudes and behaviours that are a source of risk for traffic movement, emphasising strict compliance with FEVE's Rail Traffic and Signal Regulations.	
Measures adopted by the final recipient:	**Date of communication: 11/04/2013**
It should be noted that the event occurred on the now defunct FEVE. Starting on 1 January 2013, work has been done on implementing the protocol laid down in the Renfe Operadora Safety Management System for events caused by human error in driving. In general, this protocol applies the following measures to offenders: withdrawal from duty; testing for alcohol and drug addiction; psychophysical examination at an approved Medical Centre; development of a personalised programme at the Renfe approved Training Centre, which includes: passing through a simulator, retraining courses and being monitored in a cab by an instructor; returning to duty after passing the psychophysical tests with a favourable assessment report; periodic monitoring of driving behaviour by the instructor. In addition to the above measures, each event is analysed by the Office dedicated to human error management, whose mission is to identify the causes of failure in driving and the implementation of appropriate preventive measures. In the specific field of Training it should be mentioned that the timetable used in retraining courses includes a module designed by the Traffic Safety Department, a module that addresses the analysis of the most frequent driving risks along with recommendations for avoiding these risks. Lastly, with regard to the mitigation measures introduced, to indicate that the Annual Safety Plan includes in-cab monitoring and analysis of train logs to detect inappropriate driving practices.	

[5] SAM: metre gauge service. FEVE has been defunct since 1 January 2013. Thus, ADIF is responsible for the infrastructure and Renfe Operadora is responsible for service provision.

Measures adopted by the final recipient:	**Date of communication: 05/06/2013**

In reply to the request for information on the measures that this company has been implementing in response to signal overruns recorded in the station of Astillero (files 0050/11 and 0034/12) belonging to the metre gauge network, we are providing details of the actions undertaken for complying with the recommendations made:

*To recommend to the Santander driving staff, through the driver supervisors and safety staff, the need to pay strict attention to Astillero signal indications, especially on the exit routes on the Bilbao side.

*To advise the Santander driving staff through the driver supervisors and safety staff on how to apply Instruction C43/2011.

*To check, through in-cab monitoring and analysis of train logs, that the recommendation made has been complied with and that Instruction C43/2011 has been properly applied.

*With regard to the issue of new line qualifications and retraining for certificate holders, inclusion of the Astillero station as a relevant point on the training routes required from drivers.

It should be pointed out that the response provided in our written communication of 11 April was confined to the general recommendation made by the Rail Accident Investigation Commission (CIAF): *'In the training given to driving staff, to stress attitudes and behaviours that are a source of risk for traffic movement, emphasising strict compliance with FEVE's General Rail Traffic and Signal Regulations'.* Renfe Operadora shares the approach developed by that Department regarding the station of Astillero and for this reason insists that, in addition to the measures undertaken by Renfe, all those preventive measures should be adopted that help to mitigate the risk of overrun, and specifically the second recommendation made by the CIAF (*'To study the possibility of providing exit signal S1/1L with an ASFA warning beacon'*). In view of the limited visibility of the signal that was overrun, it is important to give the driver advance notice of the signal order through reading a warning beacon. In the opinion of our technicians it is feasible to install such a beacon.

File	0050/12
Final recipient	**Renfe Operadora**
Recommendation of the CIAF:	
50/12-1 To specify in the maintenance instructions how the operation of lubricating the locking pins should be carried out in order to be effective. To ensure that the maintenance operation is properly carried out, the operatives who will perform it will be trained and random checks made to see that it is done correctly.	
Measures adopted by the final recipient:	**Date of communication: 03/06/2013**
* The BRAVA axle inspection log used in maintenance operations was amended, adding a final operation in the work sequences, for checking the correct lubrication of pins and bushings. * Maintenance workers were informed about and trained in the scope and consistency of the new operation to be performed. * Both measures result from the implementation of a new pin inspection procedure, drawn up in accordance with the recommendations received, and which has been in force since the beginning of August 2012. * All the vehicles were reviewed in accordance with the above procedure and in all cases the result was that the lubrication was correct. * No anomaly was found during the checks and verifications by those responsible for performing the work in the workshops.	
Final recipient	**Renfe Operadora**
Recommendation of the CIAF:	
50/12-2 To ask the technologist to study the use of types of fittings other than the pin and bushing to reduce wear and lubrication requirements.	
Measures adopted by the final recipient:	**Date of communication: 03/06/2013**
* The manufacturer CAF has studied the use of other materials for improving the lubrication of bushings and pins and thus making the activation of the axle locking mechanism easier. Due to the negative results obtained, this type of solution has been scrapped. * A modification has been approved to the housing which, once installed, will enable the visual inspection, lubrication, and, where necessary, replacement of the pins, without needing to remove the shaft.	