



Bundesanstalt für Verkehr [Federal Office of Transport] Unfalluntersuchungsstelle des Bundes [Federal Accident Investigation Bureau] TrauzIgasse 1 1210 Wien Austria Tel.: 0043 (664)818 90 96 Email: <u>peter.urbanek@bmvit.gv.at</u> Web: http://versa.bmvit.gv.at **BUNDESANSTALT FÜR VERKEHR** [FEDERAL OFFICE OF TRANSPORT] Unfalluntersuchungsstelle des Bundes [Federal Accident Investigation Bureau] Bereich Schienenverkehr [Rail traffic area]

ANNUAL REPORT 2010

1. General

The Austrian Accident Investigation Bureau has a multi-modal structure and has separate sections devoted to aviation, rail transport, shipping and cable cars.

From an organisational point of view, the Austrian Accident Investigation Bureau is part of the Federal Office of Transport. The Federal Office of Transport is an agency within the Austrian Federal Ministry for Transport, Innovation and Technology.

2. Legal framework (Rail Transport Section)

The legal framework for the investigation of incidents in the Rail Transport Section is as follows:

- 1. Directive 2004/49/EC ('European Railway Safety Directive')
- 2. Unfalluntersuchungsgesetz [Accident investigation law] BGBI. (Bundesgesetzblatt = Federal Gazette I, No 123, 2005)
- 3. Railway notification ordinance (BGBI. II, No 279, 2006)
- 4. Eisenbahngesetz [Railway Act] (version contained in BGBI. I, No 125, 2006)

During the year covered by the report work was started to prepare an amendment to the Accident Investigation Law. This amendment is intended, among other things, to deal with the provisions of Ordinance 996/2010/EC ('Regulation for investigation and prevention of accidents and incidents in civil aviation') and the provisions of Directive 2009/18/EC ('Directive establishing the fundamental principles governing the investigation of accidents in the maritime transport sector') and to take account of the previous activities of the Accident Investigation Bureau. It is planned that the amendment to the Accident Investigation Law should come into force in the first half of 2012 and will in future be known as the '*Bundesgesetz über die unabhängige Sicherheitsuntersuchung von Unfällen und Störungen*', ['Federal law on the independent safety investigation of incidents and accidents]. When the amendment comes into force the Austrian Accident Investigation Bureau will be known as the '*Sicherheitsuntersuchungsstelle*' [Safety Investigation Bureau].



3. Remit of the Austrian Accident Investigation Bureau

The central remit is to investigate incidents by conducting an expert investigation, determine the cause and, if necessary, draw up safety recommendations in the form of suggestions for improving railway safety. These investigations are not intended to establish guilt or liability.

4. Characteristics of investigations of occurrences

Reporting

The railway companies concerned have an obligation to report incidents. The incidents to be reported and the timing and form of the report are set out in the notification ordinance.

Initiation of an investigation

An investigation always begins with the report of an incident; however, it should be noted that an investigation is not initiated for every report. The decision as to whether to initiate an investigation depends on the extent to which the cause of the incident is clear. Where an investigation is initiated, it is necessary to specify whether on-site fact-finding will be required for this investigation.

Investigation

All investigations have to be carried out immediately and in a straightforward and appropriate manner. In this regard it should be noted that the investigation process is not public and the personnel conducting the investigation have a duty of confidentiality. The powers of the investigating personnel in relation to on-site investigations are set out in the Accident Investigation Act.

Investigation report

Every investigation is concluded with an investigation report, which is distributed to the appropriate parties for comment prior to publication. The final investigation report has to be published and must contain, among other items, details of the incident, the modes of transportation involved, the circumstances that contributed to the accident, the investigations carried out, and their results, and conclusions as to the cause. The final investigation reports are published on the website of the Federal Office of Transport (<u>http://versa.bmvit.gv.at</u>).

Safety recommendations

Safety recommendations are drawn up on the basis of the results of the investigation and take the form of suggestions as to how to improve transport safety. These are directed at those offices able to implement the recommendations in the form of suitable measures.



Whether and to what extent safety recommendations are implemented once issued is the responsibility of those directly concerned.

5. Activities in 2010

General

In 2010 the rail transport section of the Austrian Accident Investigation Bureau dealt with a lower number of incidents than in 2009.

	2009	2010
Total number of inci-	1444	1384
dents		
of which accidents	989	958
of which incidents	455	426

This change is partly due to the adoption of particular safety recommendations by the railway undertakings but also to the set of preventative measures to improve traffic safety. In the past year **26 investigations were carried out on site** (of which 5 were after accidents on level crossings) as well as **22 secondary investigations** (of which 3 were after accidents on level crossings). On top of this a number of core themes were addressed, and these are being continued in 2011 on the basis of developing trends. These core themes include, in particular, incidents involving rail vehicles (wheelsets, loads), incidents at level crossings, as well as incidents in connection with work in the danger area around the track.

On-site investigations

Date	Incident
11/01/2010	Derailment of Z 3220 in Sattledt Station
27/01/2010	Derailment of Z 54701 in Vienna Central Marshalling Yard
29/01/2010	Derailment of Z 55201 between Mitterndorf-Moosbrunn and Wampersdorf Stations
15/02/2010	Derailment of Z 8324 in St. Georgen im Attergau Station
21/02/2010	Rolling away and derailment on a new piece of track between Altmannsdorf Junction and Inzers- dorf Station
17/04/2010	Derailment of Z 71006 between Wackersbach and Prambachkirchen-Bad Weinberg Stations
28/04/2010	Derailment of Z 64245 in Hohenau Station
29/04/2010	Collision of Z 5068 with a crane arm (rail removal device) between St. Johann im Pongau and Bischofshofen Stations
30/04/2010	Collision of a rake of wagons with subsequent derailment in St. Polten Station.
07/05/2010	Injury to a child caused by Z 316 of line U 3 in Enkplatz Station



05/06/2010	Derailment of Z 48408 in Selzthal Station
13/06/2010	Collision of Z 47018 in Angern Station
16/06/2010	Derailment of Z 46676 between Hintergasse and Braz Stations
08/07/2010	Derailment of Z 47385 in Traismauer Station
14/07/2010	Derailment of Z 45305 in Vienna Central Marshalling Yard
27/07/2010	Electrical accident in Strasshof Station
02/09/2010	Derailment of Z 6831 in Ober Grafendorf Station
25/10/2010	Shunting collision in Bruck an der Mur Station
05/11/2010	Collision of Z 54054 with a shunting movement in Villach West Station
09/12/2010	Fracture of an axle in Z 45043 between Süssenbrunn and Stadlau Stations and subsequent derailment in Vienna Central Marshalling Yard
10/12/2010	Derailment of Z 3420 between Steeg-Gosau and Obertraun-Dachsteinhöhlen Stations

Further investigations

Date	Incident
28/01/2010	Collision of Z 663 with swirling ballast between St. Valentin and Amstetten Stations
10/02/2010	Unauthorised passing of signal by Z 2606 at Himberg Station
12/02/2010	Defective entry of Z 5943 in Hörsching Station
15/02/2010	Collision of Z 68 with metallic part in Sittenberg Tunnel
17/02/2010	Injury to a shunter in a private siding in Linz
28/04/2010	Derailment of Z 1061 in Feldeler Station
16/05/2010	Derailment of Z 1041 in Hölltal Station
07/06/2010	Derailment of Z 47046 (with associated automatic derailment) near Hohenau Station
11/06/2010	Fire on traction unit 2143 032-7 in Gloggnitz Station
25/06/2010	Collision of Z 746 with sheet metal parts between crossover tube 3 and automatic block tube 4
27/06/2010	Derailment of Z 1045 in Feldeler Station
06/07/2010	Vehicle rolled away in St Michael Station
10/07/2010	Collision of Z 202 with buffers in Stadion Station on Line U2
27/07/2010	Unauthorised departure of Z 3185 from Neufelden Station
10/08/2010	Derailment of Z 8144 in Gschwendt-Rabersberg Station
12/09/2010	Derailment of Z 2123 in Klosterneuburg-Weidling Station
22/10/2010	Derailment of Z 1082 in Feldeler Station
05/11/2010	Derailment of Z 1003 in Feldeler Station
05/11/2010	Derailment of Z 2001 while shunting in Mutters Station
19/12/2010	Derailment of Z 1044 in Telfer Wiesen Station



Accidents at level crossings

Date	Incident
11/01/2010	Collision of Z 3312 with a car on level crossing at Piesendorf
12/04/2010	Collision of Z 8554 with an ambulance on level crossing between Groß St. Florian and Frauental- Bad Gams Stations
29/06/2010	Collision of Z 72633 with a car on level crossing at Munderfing
06/07/2010	Collision of Z 4530 with a cyclist on a level crossing in Wolfsberg Station
26/07/2010	Collision of Z 7820 with a car on a level crossing in Purbach am Neusiedlersee Station
27/08/2010	Collision of Z 2624 with an agricultural vehicle on a level crossing at Frauenkirchen
05/09/2010	Collision of Z 622 with a car on a level crossing at Eisenstadt
20/12/2010	Collision of Z 4335 with a car on a level crossing at Steindorf am Ossiachersee

Accidents creating media interest





Details of the accident:

After the signal for departure had been given a child got its foot caught when trying to leave the train from the middle door of the last half coach and was dragged to the end of the platform (in direction of travel of Z 316), hit the passageway block that was there and was seriously injured.

Cause:

Incorrect behaviour of passengers when boarding. Non-observance of the child in the danger zone between the underground train and the yellow safety line when getting ready to leave.



Derailment of Z 46676 between Hintergasse and Braz Stations (V)



Details of the accident:

The locomotive and 13 loaded car transporter wagons of Z 46676 were derailed just before Braz Station. The locomotive driver was seriously injured by the railway infrastructure. The vehicles, the payload and the local infrastructure suffered considerable damage.

Cause:

Striking and blocking of the brake coupling between the parts of the first wagon. Due to the blocked brake coupling the brake hose was squeezed and the following wagons could no longer be braked. Because of the gradient of up to 32% the train accelerated to 125 km/h and derailed in a curve before reaching Braz Station.

Safety recommendations

In 2010 the following safety recommendations were issued.

Date	Incident
	Derailment of Z 54352 between Mallnitz-Obervellach and Böckstein Stations (S)
	Produce a standard maintenance schedule.
	• Consider whether with certain overheated wheels, in addition to the residual stress measurement check, a state of the art test should be done on the wheel disc (e.g. magnetic powder crack detection or eddy current test).
	• Consider whether measures are necessary to mark wheel discs that have already been noticed as having been overheated.
	• Consider whether the fitting of derailment detectors to freight wagons that are in permanent use for the carriage of dangerous goods (e.g.tank wagons) is necessary.
	• Consider whether fixed derailment detectors (e.g. prototype of the ÖBB Infrastruktur AG) should be fitted to critical places (such as tunnels, bridges, etc.). A suitable design shall be submitted to the responsible authority and approved by it.
31/10/2007	• Consider whether the multiplication factor for 'G' braked vehicles should be 75% of the P value (as specified in UIC Leaflet 544-1) instead of the factor of 80% currently used in the standard basic brake calculation.
	 Consider whether a standard basis is necessary to consider the correction coefficients κ (kappa factor as specified in UIC Leaflet 544-1, Annexe K2), for the determination of the braked weight percentages for freight trains with lengths > 500 m.
	• Consider whether the regulations for the conditioning of the brakes (block brakes with K-blocks and disc brakes) or whether the regulations before entry to a downhill gradient are sufficient.
	• Consider whether additional regulations to DV M26 - 'Running down gradients (banks, steep stretches of line)' need to be evaluated when lines are upgraded.
	Consider whether the safety recommendation A-53/2010 must be contained in a regulation that has to be approved by the authorities.
	• When the contract is awarded to an expert the test samples supplied for the test must not be scrapped after the investigations but returned to the customer.
	• Training the staff to prepare the train data especially the assigning and the stabling of tractive units.
	• Check the K-values used (calibration values of the measuring system for residual stress test) and the permissible limit values in the residual stress test.



	Derailment of 7 54091 in Pöchlam Station (NÖ)
	 Consider whether internal and/or external consultants could be used to determine a measure for the homogeneity of the brakes in a freight train, and, indeed, in relation to a combination of the following parameters.
	vehicles in brake position 'G' or 'P'
	empty and loaded vehicles
	brakes isolated on individual wagons
	 Braked weight percentage of individual wagons different as, for example, wagons with the lettering 's' (λ ≤ 70%) or 'ss' (λ = 90% with 20 t axle load with block braked wheels)
18/10/2008	wagons with an axle load of 22.5 t or 25 t
	position in train
	• Consider whether in the brake position 'G' with braking by means of the electro-dynamic brake of the tractive unit the regulations in UIC Leaflet 540 can be respected.
	 Consider whether with a tractive unit of Class 1016/1116 in brake position 'G+E' a determination of the brake power and lettering on the tractive unit is necessary.
	 Consider whether a standard basis to consider the correction coefficients k (kappa factor as speci- fied in UIC Leaflet 544-1, Annexe K2), is necessary for the calculation of the braked weight percent- age for freight trains with a length > 500 m.
	• Consider whether the standard basis for assessment of the wagons in brake position 'G' in the train must be done with the factor of 0.75 specified in UIC Leaflet 544-1, point 9.2.5. At present a factor of 0.8 is used as specified in ÖBB document DB 610 Annex 3.
	Derailment of Z 45818 between Gummern Junction 2 and Gummern Station (K)
	 For vehicles with the class number 4293 of type Laes⁵⁵⁹ and the county code '80' the railway under- taking should ensure that the wagon examination in service of these vehicles should focus on look- ing for suspension spring fractures or deep marks on the spring clip of the suspension in the centre
	of the vehicle.
	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that:
	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge;
	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed.
31/10/2008	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over.
31/10/2008	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over.
31/10/2008	 For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that these vehicles are checked when they go to maintenance workshops with the emphasis on: suspension spring fracture, erosion marks on the spring buckle as well as an absence of cracks on the spring buckle and the suspension spring leaves on the running gear of the central axle and
31/10/2008	 For vehicles. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that these vehicles are checked when they go to maintenance workshops with the emphasis on: suspension spring fracture, erosion marks on the spring buckle as well as an absence of cracks on the spring buckle and the suspension spring leaves on the running gear of the central axle and damage to the crossing bridge / tappet / bolt connection assembly and that these items are correct to drawing.
31/10/2008	 Ing the vehicle. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that: no car is loaded directly on the connection bridge and the loaded cars are positioned with sufficient distance from the connection bridge; the permissible axle loads are observed. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that no curves with a radius of < 150 m are run over. For vehicles with the class number 4293 of the type Laes⁵⁵⁹ and the county code '80' the vehicle owner should ensure that these vehicles are checked when they go to maintenance workshops with the emphasis on: suspension spring fracture, erosion marks on the spring buckle as well as an absence of cracks on the spring buckle and the suspension spring leaves on the running gear of the central axle and damage to the crossing bridge / tappet / bolt connection assembly and that these items are correct to drawing. The examination must be done at least once per year.



	Derailment of Z 1873 at Sillian (T)
	Application of the ÖBB internal regulations DV B29.
	 Ensure that the contractor responsible for snow removal from the premises (e.g.: platform clearance) does not put the snow on the track equipment but on the places provided for it or removes it (two in- cidents on 3 February 2009 in Maria Elend in Rosental).
20/01/2009	 When checking the access to the network through the network access office of the Infrastructure Manager care should be taken that only those vehicles which are suitable for the infrastructure run on it (e.g. high snow level). If necessary the Infrastructure Manager should issue suitable technical instructions or restrictions.
	• Ensure that the design of the ploughs and bolt-on parts on locomotives, railcars and driving trailers is suitable for the snow height mentioned in ÖBB regulation DV B29, Point 55. (50 cm over top of rail). If this is not the case, then operating measures must be devised so that the snow does not reach this level in the track area (e.g. snow ploughing shuttle runs).
	Derailment of Z 1873 in Sillian (T)
	 Consider whether important parts of the ÖBB internal regulation 'DV B 29' should be put into an 'Additional Regulation for Signal and Operating Instructions'.
	Revision of the ÖBB internal regulation 'DV B 29' to bring it up to date.
	 Consider whether on certain level crossings, on lines subject to bad weather, it is necessary to install a switch heating system.
	Correction of the station area of Sillian Station. The line 40701 is not a main line.
20/01/2009	Ensure that Sillian Station has a signal lamp that works.
	• Ensure that the deletion of the train data and brake calculations are carried out as specified in the instructions.
	• The winter service instructions must be put into a set of rules that is understandable for all staff involved.
	 Consider whether freight wagons in accordance with TSI freight wagons, or RIV and freight wagons as agreed are allowed to travel on the lines specified in TSI HG Infrastructure without consideration of the ORE B55/RP8 report.
	Derailment of Z 2101 between Imfritz and Hötzelsdorf-Geras Stations (NÖ)
	 In the course of checking the access to the network through the network access office of the Infra- structure Manager care must be taken to see that only vehicles suitable for the infrastructure run on it (e.g. high snow level). If necessary the Infrastructure Manager should issue suitable technical in- structions or restrictions.
02/03/2009	• Ensure that the design of the ploughs and bolt-on parts on locomotives, railcars and driving trailers is suitable for the snow height mentioned in ÖBB instruction DV B29 Point 55 (50 cm over top of rail). If this is not the case suitable measures must be taken (e.g. setting up snow protection fences, snow clearing shuttle runs or additional tractive units at the front of the train).
	 Warn the locomotive drivers that they should advise the IM of unusual features on the lines such as snow drifting and cornice formation.



	Collision of Z 21023 with Z 43007 in Kritzendorf Station (NÖ)
	 The design of the PZB 90 with restrictive speed monitoring offers a significant improvement in the monitoring of the approach speed to a main signal showing 'halt'. It is thus recommended that the PZB 60 design should be replaced with the PZB 90 design on tractive units and driving trailers.
	• As a supplement to the vigilance checking by the PZB 90 it is recommended that the line side equipment should be fitted with 500 Hz magnets. The restrictive speed monitoring of the PZB 90 is improved by an additional fitting with a 500 Hz magnet in the track. Consequently a possible unacceptable freeing of the tractive unit from the restrictive monitoring and an excessive acceleration is counteracted if the train approaches a signal at danger.
	• The equipment conversion planned for the middle of 2009 in Krizendorf Station, the modernisation of the protection signals Sch2 and Sch4 with signal repeaters together with PZB equipment 1000 Hz (see point 11) was not achieved by 24 February 2010. It is recommended that this measure should be carried out at the latest by the middle of 2010.
26/03/2009	• Consideration should be given to other operating control points on main lines or HL lines where there is a similar situation to that in Kritzendorf Station (platform area, protection signal and a main signal placed behind it) where the sighting distance of the main signal is indeed sufficient (in accordance with ÖBB DV S60), the main signal from the platform area or from the protection signal lying in front of it cannot be clearly seen.
	In these cases signal repeaters with 1000 Hz PZB or a line side fitting with 500 Hz PZB equipment (safety recommendation A-63/2010) should be fitted. This would be a help to the train drivers in observing the signals and also an effective improvement to the vigilance check of the PZB 90. The speed of approach to a main signal at danger would then be limited to the lower speed range.
	 According to the current planning arrangements in ÖBB DV S60 a retrofitting with signal repeaters together with PZB equipment 1000 Hz is not necessary. It is, however, necessary from the safety point of view at particularly dangerous places on the system to help train drivers comply with the signals. On lines with PZB operation a signal repeater with 1000 Hz PZB equipment offers a relative- ly simple technical solution.
	It is recommended that the current planning rules (ÖBB DV S60) are reviewed to see whether they meet the current state of the art and the legal requirements [as for example AschG].



	Derailment of Z 41186 between Neufeld an der Leitha and Ebenfurth Stations (NÖ)
	 Maintenance work to lift the SES should be done in the medium to long term by machine and should thus be demonstrable in technical documentation.
	 Consider whether the data from the machine measurements must be produced at the same time all along the line.
	 Definition of SES for the mutual height position (cant of the track) as specified in the draft of TSI CR INFRA.
	 Consider whether in the definition of SES for the mutual height position (cant of the track) the information in ORE B55/RP8, Figure 7 must be considered in DB IS 2.
	 Check ÖBB-DB IS 2 regarding the permissible maintenance parameters (ES and SES) for the permissible track twist in connection with track cant.
	• Fit a local piece of equipment for the lubrication of the rail edge for this section of track.
	 Ensure that the coupling condition in the train meets the requirements of DV V3, Article 16(4) (no loose couplings).
	 Include red bordering around the lettering of the hand brake to indicate that it can be operated from the ground.
08/04/2000	Consider whether an adjustment can be made to the recording of the traction/braking force notch- es on the recording equipment of the tractive units.
00/04/2009	• Ensure that the instructions for securing the load as specified in RIV - loading tariff are observed.
	 Consider whether on lines specified in TSI HG infrastructure freight wagons, in accordance with TSI vehicle freight wagons or RIV and freight wagons as specified by agreement, are allowed to run without considering ORE B55/RP8.
	 Consider whether the rules governing the route (e.g. ÖBB-DB 50-2) must be revised in such a way that the cant of the track is limited depending on the radius of the curve.
	 Consider whether it is practical to reduce the present cant of the track on certain sections of the line (e.g. Semmering line).
	 Check the maintenance rules (e.g. ÖBB-DB IS 2) regarding the permissible maintenance parame- ters (ES and SES) for the permissible track twist in connection with track cant.
	 Fit local fixed equipment for rail edge lubrication especially for exposed sections of track (tight curves and large cant values, as well as before certain stations with special route parameters).
	• Ensure that after work has been done on the track (e.g. fitting of new equipment, rail grinding, etc.) before the line is released for traffic there is sufficient lubrication of the rail edges.
	 In the TSI for infrastructure, in addition to the permissible track twist, the cant of the track must be related to the radius of the curve.
	Check EN 13803-1 in connection with the twist and permissible cant of the track, depending on the radius of the curve.
	Collision of Z 53336 with a track maintenance machine between Innsbruck 1 and crossover at Innsbruck 2 (T)
	 Evaluate the Betra of building sites with use of track maintenance machines.
05/07/2009	 Consider whether parts of DB 601.02, Annex 9 - Guidelines for the assessment of measures when the loading gauge is exceeded do not have to be put into an authority approval obligation docu- ment.
	Sample checking of Betra for its requirements by monitoring parts of the operating management
	Brake problem on Z 43850 (RoLa) between Fritzens-Wattens 2 Junction and Innsbruck 1 Junction (T)
	Check the position in which the air shut-off cock is fitted.
40/7/0000	 Check the torque on the air shut-off cocks, and if necessary, change the springs on the air shut-off cocks.
16/7/2009	 Check the procedure when loading so that it is not possible to climb on or off ROLA wagons during and after the brake test.
	 Regular inspection of the end position of the air shut-off cocks on ROLA wagons by the wagon technical department during the brake tests and exit examinations.
	Coupling of both air brake pipes on wagons in ROLA trains.



31/7/2009	Unprotected level crossing between Peggau-Deutschfeistritz and Gratwein-Gratkorn Stations (ST)
	• Ensure that the following measures are implemented on <i>Eisenbahnkreuzungssicherungsanlage</i> EKSA [level crossing safety equipment] of the same type and functionality:
	Installation of over-voltage protected assemblies.
	 Modification of the software version in accordance with the declaration EisbG 1957, Article 40 Person of 30 August 2009 regarding
	o BUES2000 Firma
	 Elektonisches Stellwerk ESTW [Electronic signalbox] interface 'Switching-on places running through platform x direction y'
	Fatal injury to a person struck by Z 732 in Knittelfeld Station (ST)
26/8/2000	 Consider whether the use of vehicles with folding hinge doors as in the Bmz affected, as specified in EisbBBV, Article 25(2), is permissible in Austria.
26/8/2009	 Consider whether vehicles used in Austria must have, in addition, a central locking system (as speci- fied in UIC Leaflet 560 Point 3.2.1.2) which enables the entrance doors to be locked during halts in stations on the side that is away from the platform and when stopping on the main line on both sides (side sensitive door locking).
	Collision of Z 26471 with a works train (SkI) in Vienna Matzleinsdorf Station (W)
10/9/2009	 Revision of ÖBB-DV V3 Article 96 (track under repair), (1) (Approval also for station tracks) as up to the present day only one line track can be taken out of service by BETRA and declared to be a track under repair.
	Collision of Z 3312 with a car on a level crossing in Piesendorf Station (S)
	 Rail and road side check on the level crossing. This includes, in particular, the assessment of the decision regarding the currently valid regulations as for example:
11/1/0010	 The type of protection (e.g. done in accordance with information, available protection bearing in mind existing traffic levels as well as possibly changed parameters such as train and road vehi- cle frequency, etc.)
11/1/2010	• The siting of the technical equipment and road traffic signs or signals (e.g. set up points, visibility of the equipment, fitting of distance warning signals as specified in StVO, Article 50 Danger signs, (6)c, etc.).
	 Hold special information events locally on the subject of level crossings in general and the correct behaviour of road users in particular (e.g. in the community, in schools, directly at level crossings, etc.).
	The focus of action of the executive should be direct on site at the level crossing.
	Derailment of Z 3220 in Sattledt Station (OÖ)
11/1/2010	 Consider the possibilities of a technical solution to the registration (recording) of the interaction of a trailable one way switch with the associated Wegübergangsicherungsanlage WÜS [Walking route safety equipment] and the orderly functioning of the WÜS (lamp failure).
	Derailment of Z 54701 in Vienna Central Marshalling Yard (W)
	Remind the staff affected about the orderly removal of the securing material.
	Train the staff concerned regarding the classification, reporting and discharge of required measures when such events occur.
07/04/0040	• Consider whether the Algemeiner Vertrag für die Verwendung von Güterwagen AVV [General contract for the use of freight vehicles] suitably deals with the measures for derailed freight vehicles
27/01/2010	 Consider whether derailed wagons of foreign wagon holders should be allowed to run on the Austrian rail network without appropriate examination and maintenance.
	Consider whether the treatment of derailed wagons must be specified in ZSB 31.
	 Consider whether the unambiguous clarification of the responsibility of the authorities in accordance with Article 4 EisbG a main railway-VO (High capacity lines, Trans-European Network, etc.) is re- quired.
	Check the description of Vienna Central Marshalling Yard Station to see whether



	• the lines mentioned are main or branch lines as specified in EisbG, Article 4,
	the km distances are correct.
	Collision of Z 663 with swirling ballast between St. Valentin and Amstetten Stations (NÖ)
28/01/2010	 Adjust the set of rules to include the knowledge of DB AG, for example, the doing away with sleepers between the rails.
	 Ensure that before the onset of winter (in parts of Austria and the adjacent foreign countries) the measures specified in A-071/2010 are carried out.
	• Ensure that snow and ice are regularly removed from vehicles (e.g putting them into heated depots, underfloor cleaning, etc.)
	 Consider whether, when there is snow and ice on vehicles, operating measures such as the reduction of speed to vmax = 160 km/h should be introduced.
	Collision of Z 68 with a metallic part in Sittenberg Tunnel (NÖ)
45/02/2040	• Ensure that the covers of the toilet tanks are properly closed again after they have been pumped out by the staff of the company that does this work.
13/02/2010	Ensure that missing or damaged safety chains or safety wires are fitted before the vehicles are formed into trains.
	Derailment of Z 8324 in St. Georgen im Attergau Station (OÖ)
	• Consider whether, when there are trailable one way points, switch rolls should be installed in future. As a result the return resistance can be considerably reduced regardless of the lubrication.
15/02/2010	 Consider whether it is possible to connect the trailable one way points to the local railway lines train control system operated by StH (on the line from Vöcklamarkt to Atlersee already in the conversion phase).
10/02/2010	Revision of Annex 1 Infrastructure basic data for the standard safety certificate of the IM.
	Consider whether for this <i>Elektrotriebwagen</i> ET [EMU] (this series) the installation of a recording device is necessary or desirable.
	Correction of the braking lettering.
	Derailment of Z 71006 between Wackersbach and Prambachkirchen-Bad Weinberg Stations (OÖ)
	Consider whether it is practical to reduce the existing cant on certain sections of line.
	Check the maintenance rules regarding the permissible maintenance parameters (ES and SES) for the permissible track twist in connection with cant and direction.
17/04/2010	• Consider whether the lettering of the load limit D with an axle load of 21.0 t is permissible with this vehicle series on the basis of the axles used.
	 Check whether the maximum speed of 40 km/h specified in the working timetable can be increased to 50 km/h by means of a general order provided a higher braking figure is used.
	Collision of a rake of wagons with subsequent derailment in St. Pölten Station (NÖ)
	 A check needs to be made to see to what extent tracks of 'auxiliary facilities' (e.g. loading bays, branch lines, workshop sidings, traction unit stabling sidings, etc.) do not need to be included in the program- ming of the ABUM.
30/04/2010	 Until the implementation of the above mentioned safety recommendations switches which lead to tracks defined in the station description as 'auxiliary facilities' should be individually locked in a turning away position.
	• Symbols for the programming of the ABUM on the screens of the signal box equipment shall be ar- ranged in such a way that they are not likely to be confused.
	Remind staff of the speed when shunting.



	Derailment of Z 46676 between Braz and Hintergasse Stations (V)
	 For car transporter wagons of type 23 87 437 2 xxx-x and the country code 'F' which have the same or similar design of the connection and suspension of the brake coupling between the two parts of the wagon (Figure 3 and 4) it is necessary to ensure that:
	 a safe support and fixing of the brake coupling is available (two wire clamps are available, wire clamps are tightly screwed up, undamaged wire cables as well as fixing clamps),
	 the height position of the brake coupling is guaranteed,
16/06/2010	 there is a minimum distance of 140 mm above rail for the parts of the screw coupling, the parts of the brake couplings and the suspension system.
	 Checking these parameters on the vehicles of Type 23 87 437 2 xxx-x and country code 'F' involved should be done as part of the wagon examinations in service and by a special examination in the ser- vice workshops of the vehicle owners.
	 For car transporter wagons of Type 23 87 437 2 xxx-x and country code 'F' which have the same or a similar design of the connection and suspension of the brake coupling between the two parts of the wagon (Figure 3 and 4), it is recommended that as a middle term measure the brake coupling between the two parts of the wagon should be replaced with a continuous air pipe without brake coupling.
	Collision of Z 72366 with a car on level crossing at Munderfing (OÖ)
29/06/2010	 Holding special information events locally on the subject of level crossings in general and the correct behaviour of road users in particular (e.g. in the community, in schools, directly at the level crossings, etc.).
	The focus of action of the executive direct on site at the level crossing.
	Collision of Z 4530 with a cyclist on a level crossing in Wolfsberg (K)
	 Rail and road side check on the level crossing. This includes, in particular, the assessment of the decision taken in 1999 in regard to the currently valid regulations as for example:
06/07/2010	 The type of protection (e.g. done in accordance with information, available protection bearing in mind existing traffic levels as well as parameters which may possibly have changed such as train and road vehicle frequency, etc.).
	 The siting of the technical equipment, road traffic signs and signals and ground markings (e.g. location, visibility of the equipment, etc.).
	Electrical accident in Strasshof Station (NÖ)
	 Ensure that an evaluation is always carried out in accordance with Article 4 in connection with Article 7 ASchG.
	Check whether in such cases a safety supervisor is necessary.
27/07/2010	 Ensure that for the work in which the protection of the contractor is provided by fixing a track stop, a signal as specified in DV V2 Article 31(4) FAHRZEUG DARF NICHT BEWEGT WERDEN [VEHICLE MAY NOT BE MOVED] or Article 36(!) HALTSCHEIBE [STOP SIGNAL DISK] is fitted.
	 Check whether as a protective measure for the staff of outside firms in such cases 'Keine Fahrten' [No movements] according to DV V3. Article 88 must be used.
	Ensure that staff from outside firms who carry out contract work are provided with suitable protective clothing and equipment and use them.
	Collision of Z 2622 with a car on a level crossing at Eisenstadt (B)
05/09/2010	 Consider whether the road traffic sign 'AUTOSTRASSE' [ROAD] should be positioned after the level crossing.



Incident statistics 2010

Reported incidents (all railways)

Reported incidents	Number	of which serious accidents
Reported incidents (accidents and incidents)	1384	91
of which reported accidents	958	91
of which reported incidents	426	-

Reported accidents by accident type (all railways)

Accident type	Number	of which serious accidents
Train collision	114	3
Collision during shunting / running on branch lines	121	2
Train derailment	22	2
Derailment during shunting / running on branch lines	187	2
Accidents at level crossings	170	35
Damage during the carriage of dangerous goods	16	-
Injury / death of persons caused by rail vehicles	46	35
Injury / death of persons caused by other accidents	30	12
Fires / explosions, vehicles	45	-
Fires / explosions, infrastructure	92	-
Suicide / attempted suicide	115	-

Reported incidents by incident type (all railways)

Incidents	Number
Unauthorised passing of a signal by a train	38
Unauthorised passing of a signal during shunting / running on branch lines	38
Unauthorised entry into occupied sections of track	1
Incorrect entry or exit or signalling	13
Driving without being instructed to do so or without authorisation	22
Rail vehicles rolling away	14
Technical defects in installations and rail vehicles	89
Trains parting	115
Incorrect loading / securing of load	15
Impairment of safe operation as a result of the violation of railway regulations	15
Persons placed in danger during work on the track area by passing trains	2
Failure to secure level crossings	31
Road vehicles entering level crossings in the process of closing	10



•	Unauthorised presence on railway premises	14
	Other problems	9

Accidents to persons, including suicide - (all railways)

	Fatalities	Serious injuries	Minor injuries
Networked railways	110	59	74
Non-networked railways	-	2	6
Connecting railways	1	3	3
Inner-city local transport	11	9	5
Total	122	73	88

Accidents to persons by category of person (all railways)

	Fatalities	Serious injuries	Minor injuries
Passengers	-	9	43
Employees	1	17	18
Users of level crossings	13	25	23
Other persons	3	1	-
Unauthorised persons	13	9	2
Suicide / attempted suicide	92	12	2
Total	122	73	88

Reported incidents (network railways)

Reported incidents	Number	of which serious acci- dents
Reported incidents (accidents and incidents)	1133	79
of which reported accidents	734	79
of which reported incidents	399	-

Reported accidents by type of accident (networked railways)

Type of accident	Number	of which serious accidents
Train collision	113	3
Collision during shunting / running on branch lines	80	1
Train derailment	13	2
Derailment during shunting / running on branch lines	88	2
Accidents at level crossings	140	33
Damage during the carriage of dangerous goods	16	-
Injury / death of persons caused by rail vehicles	39	29
Injury / death of persons caused by other accidents	24	9



Fires / explosions, vehicles	38	-
Fires / explosions, infrastructure	82	-
Suicide / attempted suicide	100	-

Reported incidents by incident type (networked railways)

Incidents	Number
Unauthorised passing of a signal by a train	34
Unauthorised passing of a signal during shunting / running on branch lines	38
Unauthorised entry into occupied sections of track	1
Incorrect entering or leaving, incorrect signalling	13
Driving without being instructed to do so or without authorisation	22
Rail vehicles rolling away	12
Technical defects in installations and rail vehicles	82
Trains parting	115
Incorrect loading / securing of load	15
Impairment of safe operation as a result of the violation of railway regulations	14
Persons placed in danger during work on the track area by passing trains	2
Failure to secure level crossings	31
Road vehicles entering level crossings in the process of closing	10
Unauthorised presence on railway premises	1
Other problems	9

Accidents to persons, including suicides, by accident type (networked railways)

	Fatalities	Serious injuries	Minor injuries
Train collision	-	3	24
Accidents at level crossings	13	23	22
Injury / death of persons caused by rail vehicles	14	17	10
Injury / death of persons caused by other accidents	2	7	16
Suicide / attempted suicide	81	9	2
Total	110	59	74

Accidents to persons by category of person (networked railways)

	Fatalities	Serious injuries	Minor injuries
Passengers	-	4	36
Employees	-	14	12
Users of level crossings	13	23	22
Other persons	3	-	-



Unauthorised persons	13	9	2
Suicide / attempted suicide	81	9	2
Total	110	59	74

Reported incidents (non-networked railways)

Reported incidents	Number	of which serious accidents
Reported incidents (accidents and incidents)	31	2
of which reported accidents	31	2
of which reported incidents	-	-

Reported accidents by accident type (non-networked railways)

Type of accident	Number	of which serious accidents
Train derailment	7	-
Derailment during shunting / running on branch lines	1	-
Accidents at level crossings	23	2

Accidents to persons, including suicides by type of accident (non-networked railways)

	Fatalities	Serious injuries	Minor injuries
Accidents at level crossings	-	2	6
Total	-	2	6

Accidents to persons by category of person (non-networked railways)

	Fatalities	Serious injuries	Minor injuries
Passengers	-	-	3
Employees	-	-	2
Users of level crossings	-	2	1
Total	-	2	6

Reported incidents (connecting railways)

Reported incidents	Number	of which serious accidents
Reported incidents (accidents and incidents)	156	1
of which reported accidents	150	1
of which reported incidents	6	-



Reported accidents by accident type (connecting railways)

Type of accident	Number	of which serious accidents
Train collision	1	1
Derailment during shunting	98	-
Collision during shunting / running on branch lines	40	-
Accidents at level crossings	7	-
Injury / death of persons caused by other accidents	3	-
Fires / explosions, vehicles	1	-

Reported incidents by incident type (connecting railways)

Incidents	Number
Rail vehicles rolling away	2
Technical defects in installations and rail vehicles	4

Accidents to persons, including suicide, by accident type (connecting railways)

	Fatalities	Serious injuries	Minor injuries
Collisions	1	-	2
Injury / death of persons caused by rail vehicles	-	3	1
Total	1	3	3

Accident to persons by category of person (connecting railways)

	Fatalities	Serious injuries	Minor injuries
Employees	1	3	3
Total	1	3	3

Reported occurrences (inner city local transport)

Reported occurrences	Number	of which serious accidents
Reported accidents (accidents and incidents)	64	6
of which reported accidents	43	6
of which reported incidents	21	-



Reported accident by type of accident (inner-city local transport)

Type of accident	Number	of which serious accidents
Train derailment	1	-
Derailment during shunting / running on branch lines	1	-
Injury / death of persons caused by rail vehicles	4	3
Injury / death of persons caused by other accidents	6	3
Fires / explosions, vehicles	6	-
Fires / explosions, infrastructure	10	-
Suicide / attempted suicide	15	-

Reported incidents by incident type (inner-city local transport)

Incidents	Number
Unauthorised passing of a signal by a train	4
Technical defects in installations and rail vehicles	3
Impairment of safe operation as a result of the violation of railway regulations	1
Unauthorised presence on railway premises	13

Accidents to persons, including suicide, by accident type (inner-city local traffic)

	Fatalities	Serious injuries	Minor injuries
Collisions	-	-	1
Injury / death of persons caused by rail vehicles	-	3	1
Injury / death of persons caused by other accidents	-	3	3
Suicide / attempted suicide	11	3	-
Total	11	9	5

Accidents to persons by category of person (inner-city local traffic)

	Fatalities	Serious injuries	Minor injuries
Passengers	-	5	4
Employees	-	-	1
Other persons	-	1	-
Suicide / attempted suicide	11	3	-
Total	11	9	5



Accidents at level crossings

	2009	2010
Total	167	170
Of which with technical protection (light signals, barriers)	53	73
of which with non-technical equipment (sight, acoustic signals)	114	97
Persons killed	14	13
Persons seriously injured	35	25
Persons slightly injured	56	28

Accidents on level crossings - users

Incidents	2010
Cars	131
Lorries	18
Commercial vehicles/agricultural vehicles	10
Single track motorised vehicles	-
Bicycles	5
Pedestrians	6

Number of level crossings

	2009	2010
Total	6940	5430
Of which with technical protection (light signals, barriers)	2003	1921
of which with non-technical equipment (sight, acoustic signals)	4937	3509



Assessment

The data in the statistics bank of the Austrian Investigation Bureau enables quick assessments to be made in accordance with various criteria.

🖼 Vorfallbearbeilung				
1	VORFALLDATEN	BANK BAV/UUB		
Vorfall	Ereignisor	rt Vorfallnummer	(AutoWert)	
Bearbeiter Datum Czerny Astrid Freignis Ursache Folge In/zwischen Betriebsstelle Bei EK Vorfällen ausfullen EK km Anschlussbahnbezeichnung nur bei Vor	Ereigniszeit Weiterführe Untersuch	inde JA	PERSON Verletztenliste Reisende LV SV Tod 0 0 0 Mitarbeiter LV SV Tod 0 0 0 Fremde LV SV Tod	EN UND SACHSCHÄDEN Schaden Fahrzeuge: Schaden Infrastruktur: Schaden Umwelt: Schaden Umwelt: Schaden Ummelt: Schaden Ummelt: Schwere Unfälle nach Artikel 19 §1 gemäß 2004/49 EC
Bemerkungen zum Hergang Beteiligte Fahrten	Bei Signalüberfat Signal- art/bezeic	irung hnung	0 0 0 Verletzte gesam LV SV getötete	Immer "JA", wenn eine Person getötet (ausgenommen Suizid) JA
Zugnr Zugnummer Zugart Zugart EVU EVU Sugart Sugart	chfeld für Betriebsstelle oder EK	Neuer Vorfall	\$-	
Bezeichnung der Bst	Bst_KM: Streckennr	Sicherungsanlage / EK Sicheru	ung Bst-Art I	M E
Vorfalldatenbank der Bundesanstalt Datensatz: III II24 Det HD++ v	für Verkehr/UUB Schiene on 1124		0	© Erich Landl

VORFALLDATENBANK BAU/UUB	INCIDENT DATABASE BAV/UUB
PERSONEN UND SACHSCHÄDEN	PERSONAL INJURY AND DAMAGE
	TO PROPERTY

For each assessment an exact definition is necessary of which data should actually be shown. Thus, for example, a query to do with 'signals passed at danger 'merely displays those events, which are contained as a main event in the field 'event'. It can definitely be the



case that the passing of a stop signal at danger is exclusively the cause for the associated incident.

Basically the most serious incident is always shown; in the input fields 'result' or 'cause' incidents which can be causally related with the main event incident can be displayed and correspondingly investigated:

Main event	Subsequent events	Cause
Train collision	Train derailment	Unauthorised passing of a
	Fire on a vehicle	signal at danger
	Dangerous goods	

Assessments are possible both in tabular form and in graphical form.



Vienna, 22 November 2011

Bundesanstalt für Verkehr [Federal Office of Transport] Unfalluntersuchungsstelle des Bundes [Federal Accident Investigation Bureau] The Manager Peter Urbanek eh.

