ORGANISATION INTERGOUVERNEMENTALE POUR LES TRANSPORTS INTERNATIONAUX FERROVIAIRES

ZWISCHENSTAATLICHE ORGANISATION FÜR DEN INTERNATIONALEN EISENBAHNVERKEHR

INTERGOVERNMENTAL ORGANISATION FOR INTERNATIONAL CARRIAGE BY RAIL

OTIF/RID/CE/GTDD/2014/1

30 September 2014

(English only)

RID: **1st Session of the RID Committee of Experts' working group on derailment detection**
(Rome, 13-15 October 2014)

Subject: **Recapitulation of previous discussions**

Transmitted by the Secretariat

In this document the Secretariat recapitulates all previous discussions on derailment detection in the RID Committee of Experts, its working group on tank and vehicle technology and its standing working group.

2002

2nd session of the RID Committee of Experts working group on tank and vehicle technology (Bonn on 5 and 6 September 2002) (report A 81-03/508.2002)

Status of the telematics research project

73. Professor Hecht of the Berlin University of Technology reported on the status of the research project undertaken in Germany on the use of telematics. On behalf of BMVBW, series of tests were carried out in two stages on the detection of derailments and load monitoring. The main outcome of phase 1 was that it is possible to detect a derailment with certainty. In the following phase 2, 3 tanks wagons (1 chemical tank wagon, 1 gas tank wagon and 1 mineral oil tank wagon) were equipped in a field experiment with various sensor apparatus (GSM/GPS location finder, acceleration sensor to detect derailment and shunting impacts and temperature sensors to measure the temperature of the load and the axle bearing). The chemical tank wagon was put into operation for the longest period and most intensively in a fixed connection between Germany and Finland. Use in daily operation showed that the limit value found in the first phase in respect of derailment detection was not exceeded and that this was therefore suitable in actual practice. In addition, important aspects surrounding the

monitoring of the load (e.g. tank pressure and longitudinal impacts), logistics and data transmission were investigated. The results demonstrated the technical feasibility of using telematics. For further information, participants received a copy of an article that appeared in ZEVrail Glasers Annalen magazine on "Monitoring Rail Tank Wagons using Telematics". Following these two research projects, a further research project entitled "telematics-based information systems for vehicle drivers when carrying dangerous goods was entrusted to Dornier. This research project has a multimodal approach. In particular, it is investigating communication between the vehicle/load and locomotive driver/vehicle driver.

74. The representative of Germany added that for using telematics in accordance with the current status of the discussion, there were two relevant interfaces: communication between the wagon and the locomotive driver and communication between the wagon and a control centre. In order to ensure integrated communication, the impetus for the use of telematics should be provided in a legally binding set of regulations (RID). As current findings had shown that stationary devices are out of the question with regard to the factors which are important for the carriage of dangerous goods (precise derailment detection, pressure detection), wagon-related telematics should be advanced. The requisite interfaces and technical specifications should not appear in RID, but should be regulated by means of standards (e.g. in a UIC leaflet or in an all-embracing standard covering all transport modes).

Swiss Federal Department for the Environment, Transport, Energy and Communications (UVEK) press release dated 27 June 2002

Document: informal document INF. CH 1

79. With regard to fitting tank wagons with derailment detectors, the representative of Switzerland added that SBB and the chemical industry had chosen the wagons jointly. These were wagons that carried particularly dangerous goods. These wagons were operated both in integral and mixed trains within Switzerland and abroad. The measure had cost SBB about 7 million Swiss Francs.

80. With regard to how the derailment detectors worked, the representative of Switzerland said they were mechanically and pneumatically operated derailment detectors that required neither electrical energy nor technical data transmission devices. They could be fitted to existing vehicles. A test carried out in the course of SBB's daily operations had not led to the detector being activated in error, so a high degree of reliability could be assumed. UIC permits the derailment detector, i.e. it can also be used in transfrontier transport. UIC leaflet 541-08 describes general requirements concerning derailment detectors, so a particular manufacturer does not have a monopoly. Amongst other things, the UIC leaflet also regulates details such as marking and what to do in the event of a false alarm. In order to explain how they work, the representative of Switzerland would show a short film at the next meeting and present a model and diagram. At present, the cost of fitting a wagon with derailment detectors is €1600.

81. The representative of Germany pointed out that using a mechanically and pneumatically operated derailment detector had already been discussed within Germany's national working group. Based on information provided by the representative of Switzerland, the detector SBB were using was of the same construction as that mentioned in the Final Report. This would mean that once enforced braking had been initiated, it could not be aborted, even if a train came to a halt in a tunnel or on a bridge. The representative of Switzerland explained that the Swiss philosophy in such cases involving freight trains – as opposed to passenger trains – was that if a train derailed or caught fire, it was left standing in the tunnel and the locomotive driver could escape wearing a mask.

82. In reply to a question, the UIC representative explained that the problem of tunnels had not been taken into consideration in producing the UIC leaflet on derailment detectors.

83. The representative of Germany reported that in his country, there had been an accident in which a goods wagon carrying paper had been dragged along for several kilometres while derailed and had then come to a stop, on fire, in a tunnel. The accident caused enormous problems with regard to managing the fire in the tunnel. Another reason why it should be made possible to have control over enforced braking was the possibility of meeting passenger trains in tunnels.

Incident in Roermond (Netherlands) on 18 April 2002

Document: informal document INF. NL 1

89. The representative of the Netherlands gave a report on the incident that occurred in Roermond, in which a tank wagon carrying methanol had lost part of its braking system and derailed. A short distance further on, the wagon rerailed itself without the locomotive driver having noticed anything. At the end of the journey, it was noticed that the wagon was damaged. In inspecting the infrastructure, it was established that points and sleepers had been damaged. A connection between the damage on the wagon and that caused to the line was only made subsequently.

    He came to the following conclusions:

    – it is vital that derailments are detected,

    – RID must regulate the general maintenance of the tank wagon and not just of the tank,

    – in more minor repairs, the use of replacement parts that are not necessarily made for the wagon must be prohibited.

90. When Professor Hecht was asked, he said that the telematics derailment detector and also the derailment detector used by SBB would have detected this derailment within 2 seconds.

39th session of the RID Committee of Experts (Bern, 18-21 November 2002) (report A 81-03/501.2003)

Derailment detectors

117. The representative of Germany reminded the meeting that the working group on tank and vehicle technology had pronounced itself not in favour of introducing pneumatically-mechanically acting derailment detectors as these led directly to automatic braking. This could cause a train to come to a halt in a tunnel or in the middle of a large town and cause a disaster. He pointed out that wagons with this type of derailment detector were operating all over Europe. He called upon UIC to withdraw the corresponding leaflet.

118. The representative of Austria was of the view that the measures concerning goods wagons for dangerous goods were part of general wagon technology. A Part 9 should be provided for vehicle provisions such as these, which could be developed in line with the example of ADR (WP.15/WP.29), together with the competent bodies in this area (UIC). A special solution should not be introduced for dangerous goods. The mistakes made in ADR in the past should not be repeated.

119. The representative of UIC said the aim of the UIC leaflet on derailment detectors was only to standardize the technical aspects in order that, at SBB's request, wagons such as these could be put into operation across Europe. The decision on whether such wagons could be used for the carriage of dangerous goods came within the competence of the RID Committee of Experts.

120. The Chairman stressed that UIC had permitted these detectors. They could therefore be fitted onto all wagons. The working group on tank and vehicle technology had already raised the question as to whether the safety problems had been investigated.

121. The representative of UIP was of the view that the course Switzerland had adopted did not take account of the fact that more intelligent systems for detecting derailments were already available.

122. The representative of Austria stressed in general that Switzerland's measures were based on Swiss environmental legislation. Paragraph 1.1.4.1.1 therefore applied. The Swiss document showed the shortfalls in international legislation with regard to transport safety. But this did not mean it could be argued that this was a measure concerning environmental protection. Instead, a rule must be introduced under the auspices of the RID Committee of Experts. Each individual measure would have to be assessed to ascertain whether it was an environmental measure or a measure for improving transport safety.

123. The representative of Switzerland explained that benchmark accidents in Europe had been investigated. These accidents had shown that it had been possible to prevent extensive damage by stopping the train immediately, and that it had therefore been wise to use derailment detectors. Points were areas that typically led to disasters, and these were found in built-up areas and not on open lines. Switzerland was in favour of introducing telematics, but the amount of time indicated to bring this about (15 to 20 years) was too long. In Switzerland, the need had arisen to act immediately.

124. The representative of Germany was of the view that quick stopping was prudent. The problem was that once automatic braking had been initiated, it was not possible to intervene further.

125. The representative of Denmark pointed out that in long tunnels in Denmark, an emergency brake by-pass was prescribed for passenger trains. Consideration should be given to whether these Swiss trains could, in accordance with Chapter 1.9, be prohibited from using these tunnels.

126. The representative of Switzerland stressed that scenarios should be considered differently. In the event of a derailment being detected early and the subsequent stopping, this could prevent matters escalating, e.g. into a fire. In addition, the scenarios for passenger and freight trains were different. In the case of a fire on board a passenger train, it certainly seemed better that the train should leave the tunnel. Because of the greater scale of fire on goods wagons, it was assumed in Switzerland that it was often better to enable the engine driver to escape with an escape mask.

127. The representative of Germany thought that various States were not prepared for what was to be done in the event of automatic braking initiated by a derailment detector. Derailments on open lines could result from hot axle bearings or broken axles. In most cases, hot axle bearings were linked with a fire risk. This meant that with a derailment detector, it would no longer be possible to drive the train to a safe area where it would be easier to fight the fire.

128. The Chairman suggested that the RID Committee of Experts should adopt a recommendation whereby the UIC leaflet should be further developed such that derailment detectors in international transport could only have an influence (reversible automatic braking), in order to make it possible for the engine driver to intervene.

129. The representative of UIC drew attention to the fact that the leaflet on derailment detectors contained three chapters: pneumatic-mechanical derailment detectors, electronic derailment detectors (at present reserved) and approval. He asked whether the engine driver's actions in the event of a derailment detector coming into operation should be covered in the leaflet.

130. The Chairman asked whether irreversible automatic braking could be accepted in the carriage of dangerous goods.

131. The representative of Denmark pointed out that telematics pointed up further advantages, as the detection of overheating could establish that there was a problem before a derailment occurred.

132. The Chairman proposed the following way forward:

    1. Because of the UIC leaflet, wagons with derailment detectors could be operated in Europe.

    2. The RID Committee of Experts had expressly pointed out that accident response scenarios must be thought over because of the automatic braking.

    3. The derailment detectors issue would be transmitted to the working group on tank and vehicle technology, which would submit a proposal to the next session of the RID Committee of Experts. Switzerland would, for demonstration purposes, make available the documents that had been used as the basis for developing the derailment detectors, and invited the working group for this purpose.

133. The working group approved this course of action.

2003

3rd session of the RID Committee of Experts working group on tank and vehicle technology (Berne, 11 and 12 September 2003) (report A 81-03/509.2003)

ITEM 2: Derailment detectors

11. On the afternoon of Thursday, 11 September 2003, the Swiss Federal Office for Transport (BAV) held an information session on this subject, looking at pneumatic derailment detectors that had been fitted to rail tank wagons following various accidents in Switzerland.

12. The vice-chairman of the working group thanked Switzerland for the excellent organization of the information session.

13. In the discussion, the representative of Germany criticized Switzerland's unilateral decision to introduce pneumatic derailment detectors, as this could lead to political problems in the event of incidents in those States that had not introduced derailment detectors such as these. Measures such as these had to be decided by the RID Committee of Experts, the body responsible for developing international dangerous goods provisions for rail transport.

13a. The representative of France pointed out that overheat locator devices had been installed at various places on the network in France in order to reduce the risk of derailment.

14. The working group recommended unanimously that the following points be discussed at the next session of the RID Committee of Experts (17 – 21 November 2003):

    – the effects on the train formation (uncoupling) of a derailment detector being activated and of the subsequent emergency braking;

    – the effects of individual wagons fitted with derailment detectors in mixed train formations;

    – the effects of an emergency stop that cannot be overridden occurring on critical sections (tunnels).

If possible, statistics (causes of derailment, frequency of derailments involving dangerous goods wagons) on this subject should also be submitted. There should be a preparatory discussion of these points in the various States.

UIC leaflet 541-08 concerning pneumatic derailment detectors should be made available to the next session of the RID Committee of Experts.

2004

40th session of the RID Committee of Experts (Sinaia, 17-21 November 2003) (A 81-03/501.2004

Derailment detectors

Document: OCTI/RID/CE/40/7b) (Switzerland)

12. At its fourth session, the Working Group on tank and vehicle technology had considered pneumatically-mechanically acting derailment detectors as used in Switzerland. The Working Group decided to discuss various effects of actuated derailment detectors at the 40th session of the RID Committee of Experts (see report A 81-03/509.2003).

13. In his document, the representative of Switzerland explained that it was difficult to examine different hypotheses. He proposed that the fitting of tank wagons with mechanically-pneumatically acting derailment detectors in Switzerland be considered as a full scale trial. He offered to inform the RID Committee of Experts of all the results of this trial. In return, other States should check whether the presence of derailment detectors had limited the magnitude of a particular accident.

14. The Chairman said that the trial proposed by Switzerland was a suitable means of gathering experience and of following developments. However, he suggested finalizing various points of discussion, such as the derailment of a wagon in a train and the actuation of emergency braking by this wagon, in the context of a trial.

15. The representative of UIC noted that quick braking in the train could also occur in the event of a break in the coupling. Such occurrences arose considerably more frequently and could also provide information on how separated train sections behaved in the event of emergency braking.

16. This subject would remain on the agenda. The Working Group on tank and vehicle technology would monitor the trial.

5th session of the RID Committee of Experts working group on tank and vehicle technology (Duisburg-Wedau, 24 and 25 June 2004) (report A 81-03/507.2004)

ITEM 2a): Use of derailment detectors in Switzerland

Document: informal document INF. CH 2

10. The representative of Switzerland introduced his document setting out all the information concerning the construction components used and experience to date with the use of mechanical-pneumatic derailment detectors. According to a statement issued by SBB, a train separated as a result of emergency braking initiated by a derailment detector behaved in exactly the same way as a train separated normally.

11. The representative of Belgium referred to incidents where trains were braked following a loss of pressure in the main brake pipe. Only at a late stage had it been possible to determine that the cause of this was related to falsely activated derailment detectors. In order to make

it easier to locate these wagons, it had been suggested that detectors should be fitted with an acoustic signal. The representative of Switzerland considered that a fluorescent indicator was more suitable.

12. The representative of Spain was of the view that no satisfactory solution had yet been found for the unresolved matter of whether emergency braking should be allowed in tunnels. The representative of Switzerland replied that it was possibly safer to bring a train to a stop as quickly as possible, irrespective of where it was.

13. The representatives of Spain and UIP considered that the decision as to where the train stopped should be left up to the locomotive driver. The representative of UIC asked whether there were any provisions in the various States setting out how a locomotive driver was to react if he became aware of a derailment.

14. The representative of UIC supported the assertion in document INF. CH 2 that 80% of accidents where a large quantity of dangerous goods escaped were due to a derailment. However, the representative of UIP questioned this figure, as it did not include shunting movements. He also noted that for highly toxic goods, which are not as a rule carried in complete train-loads, there was no benefit, as it was not intended to fit all goods wagons with derailment detectors.

15. The representative of Germany pointed out that accidents that had occurred up to now demonstrated the need for measures to prevent derailments. For this reason, all systems which could offer more safety in the event of a derailment had to be considered. The working group should recommend to the RID Committee of Experts to prescribe at a particular time a system for detecting derailments and for reducing the consequences of accidents. In the meantime (around 4 to 6 years), the participants should have the opportunity of developing a system that met the requirements set out by the RID Committee of Experts. He said he was prepared to draft a document summarizing the most important points. In this context, he asked the representative of UIC to make available minutes of the discussions on including derailment detectors in UIC leaflet 541-08, in order that the conclusions could be incorporated into the document for the RID Committee of Experts. The representative of UIC said he would try to obtain the relevant documents from the Sub-Committee on braking.

16. As some questions concerned rail transport in general, the representative of France recommended checking whether other groups already existed that had dealt with the subject of derailment. The representative of Switzerland added that the people involved in the context of the interoperability directives (TSIs) should also be included.

17. In conclusion, the Chairman summarized the discussion as follows:

    – There was a consensus that derailment detectors can reduce the effects of an accident.

    – Up to now, three systems were known about (mechanical-pneumatic, signal transmission via a pressure impulse process, signal transmission via train bus).

    – Unresolved points were whether the derailment detector should function automatically or by involvement on the part of the locomotive driver and how the motional stability of the train performed when a derailment detector was activated.

    – The outcome of discussions thus far in the context of UIC and the TSIs should be incorporated into a document for the RID Committee of Experts.

ITEM 4d): Safety in rail tunnels

47. The deputy Chairman of the multidisciplinary working group on safety in rail tunnels, Mr. Bieger, reminded the meeting that there were three significant documents for safety in rail tunnels:

– UIC leaflet 779-9, which contains recommendations from the railways, although these do not replace the existing national provisions;

– document TRANS/AC.9/9, which contained both recommendations and standards set down by the railways, ministries and inspection authorities;

– the Interoperability Directive on safety in rail tunnels, which would be ready next year, and which was to be mandatory in all the EU Member States.

48. In Mr. Bieger's view, the same safety concept can be discerned in all three documents:

– with regard to infrastructure, the question arises as to whether single track tunnels should be built from the outset. In tunnels, drainage must be provided to avoid dangerous substances leaking into watercourses or sewage systems;

– it is planned to use derailment detectors for rolling stock:

– with regard to operations measures, the question arises as to whether there should be a prohibition on meeting dangerous goods trains in tunnels. Before carriage, the infrastructure operator should be given information on the dangerous goods train. On the other hand, it is not considered useful to give advance notification of dangerous goods to the competent authorities and fire brigades. This should be a matter for individual States.

49. The representative of Belgium pointed to a contradiction in UIC leaflet 779-9, in which a "derailment indicator" and an "emergency braking override" were recommended, which was not however possible with present derailment detectors. Mr. Bieger explained that a distinction should be made between goods trains and passenger trains. While it was considered possible for goods trains to come to a halt in tunnels, for passenger trains, it must be ensured that emergency braking could be overridden.

50. The RID Committee of Experts would be informed that the measures concerning the dangerous goods area could be accepted. With regard to using derailment detectors, the result of the ongoing discussion (see ITEM 2a)) should be awaited.

41st session of the RID Committee of Experts (Meiningen, 15 - 18 November 2004) (report A 81-03/511.2004)

ITEM 4: Tank and vehicle technology

Derailment detectors

Documents: A 81-03/507.2004 paragraphs 10 to 17
OCTI/RID/CE/41/4c) (Germany)

8. As an introduction, the Chairman of the working group on tank and vehicle technology referred to the status of the discussions as summarized in paragraph 17 of the report in A 81-03/507.2004.

9. The representative of Germany introduced his document, which contained a proposal for a decision of principle concerning the future use of derailment detectors. He was of the view that two years should be sufficient to collect enough practical experience in Switzerland and

to develop other technical systems further, so that a date of entry into force of 1 January 2009 could be envisaged.

10. The representative of UIC agreed that derailment detectors were useful if a single wheel set derailed, but asked the meeting to bear in mind that the causology that had been submitted to the working group on standardized risk analysis showed that in the 10 derailments listed, where there were major spillages of products, derailment detectors would have been useless. This should be taken into account in further discussions.

11. The representative of the Netherlands referred to an accident in his country in which the derailment of a wagon which caused major damage to the infrastructure had only been discovered coincidentally at a later stage owing to the subsequent independent re-railing of the wagon. This accident underlined the importance of detecting derailments, as failure to detect them could also have severe consequences for passenger traffic.

12. The representative of France proposed to amend the wording of the decision, firstly in order to permit other technical solutions for reducing the risk of derailment, e.g. hot-box detectors (see also the report of the working group in A 81-03/509.2003 paragraph 13a) and secondly in order to collaborate with other bodies dealing with the subject of derailment.

13. The representative of Belgium asked the meeting to remember that with the exception of complete train-loads, fitting individual wagons with derailment detectors was pointless, because wagons which did not have to be fitted with derailment detectors could cause derailments effecting the whole train of wagons. It was also important that the different systems that might be used should be compatible. Fitting could only be prescribed with a transitional period of at least four years once the systems permitted had been established.

14. The Chairman summarized that concurrence of the various technical solutions was absolutely vital. The decision of principal should provide the basic conditions for the development of alternative systems. If no alternative solution were found in practice within the specified timescale, the final decision could also be deferred. The work had to be carried out in conjunction with other European bodies in order to ensure as wide a dissemination as possible (also possibly wagons for non-dangerous goods).

15. The following wording of the decision of principle, amended on the basis of a proposal from France, was adopted (8 in favour, 0 against and 5 abstentions):

    "The RID Committee of Experts is convinced of the need for measures to prevent derailments in the transport of dangerous goods. It will get in touch with the other competent bodies dealing with the subject of derailment in order to develop the best suitable measures. In connection with this, RID should include a general description of the objective, the entry into force of which is planned for 2009, subject to the resolution of technical problems."

2005

6th session of the RID Committee of Experts working group on tank and vehicle technology (Bonn, 21 and 22 April 2005) (report A 81-03/503.2005)

ITEM 2 a): Detecting derailments

Document: informal document INF. CH 2

5. The representative of Switzerland introduced his document describing the problem of the false activation of mechanical-pneumatic derailment detectors fitted to SBB tank-wagons. SBB had not yet made a decision on how to proceed. He said that he was prepared by the next meeting to clarify why, in addition to increasing the lower value (value up to which the

derailment detector must not be activated), the upper value (value above which the derailment detector must be activated) was increased by 1.5 g.

Document: informal document INF. UIC 1

6. The representative of UIC explained his document and the tests carried out by UIC, which had determined the place where the derailment detectors should be fitted, the tripping value and the influence of the condition of the infrastructure.

7. The outcome of the subsequent discussion was that

   – Switzerland should request the company Oerlikon-Knorr Eisenbahntechnik AG, in agreement with UIC, to carry out trials at 6.5 g in order to gain experience of the significance of minor false activations,

   – before whole fleets were equipped, it must be ensured by testing that the derailment detectors also trip reliably at high speeds,

   – it was up to the industry, on the basis of existing electronic systems (e.g. telematics), to seek solutions for detecting derailments electronically,

   – the working group should be closely involved in the development of electronic derailment detectors in order to be in a position to make a recommendation to the RID Committee of Experts,

   – the working group is to inform the RID Committee of Experts in good time if the deadline planned for including relevant requirements in RID (2009) cannot be met.

Document: Monitoring the transport of dangerous goods with the aid of satellite navigation – presentation of the EU's MITRA Project

22. The representative of Germany informed the working group about the EU's MITRA Project (**M**onitoring and **I**ntervention for the **Tra**nsportation of Dangerous Goods) which, in addition to the transmission of data on the position of the means of transport, also deals with the transmission to a control centre of other information on the dangerous goods being carried. In the context of the project, a user survey was first carried out, the results of which had been incorporated into the conception of the project. At an information seminar of the project partners, the representative of Germany pointed out that in the light of the quantity of dangerous goods carried daily, continuous monitoring of the normal conditions of transport of all dangerous goods transport operations was neither possible nor desirable. On the other hand, establishing that there was an emergency situation would be of major benefit. He had also pointed out that for data protection reasons and for reasons of acceptability to the industry, it was unrealistic for the consignor to input all the possible transport information into a common data pool.

23. The working group welcomed this development at European level, as it also provided a necessary platform for the intended introduction of derailment detectors. The working group recommended to the RID Committee of Experts that it should see that the MITRA Project was linked in with other European projects, such as ERTMS (European Rail Traffic Management System), TSI "Telematics applications for freight transport", in order to avoid parallel developments with the consequent costs.

2006

7th session of the RID Committee of Experts' Working Group on Tank and Vehicle Technology (London, 6 and 7 April 2006) (report A 81- 03/504.2006)

ITEM 2 a): Derailment detection

Document: informal document INF. CH 1

5. The representative of Switzerland introduced his document, which set out developments and the current status of the derailment detectors that have been put into service in Switzerland. He explained that for the derailment detector, a tolerance range of 5 g would have to be maintained because of the possibility of oscillations in the main brake pipe pressure, possible temperature fluctuations and manufacturing tolerances. Thus because of the falsely activated detectors, both the lower and the upper threshold had been increased by 1.5 g. If the trial with the derailment detectors set at these values yielded a positive result, Switzerland would propose an amendment to UIC leaflet 541-08.

6. In the subsequent discussion, the positions that had already been expressed at the sixth meeting were repeated (see document A 81-03/503.2005, paragraph 7). It was again pointed out in particular that fitting wagons with mechanical derailment detectors can only be prescribed if, due to the negative effects on all railway operations, false activations can be ruled out, and if it has been proved that derailment can be detected with certainty even with the higher threshold values.

7. As the RID Committee of Experts alone can only take a decision on the use of mechanical/pneumatic derailment detectors on wagons for the carriage of dangerous goods and as an infrastructure is necessary for using electronic derailment detectors, and this infrastructure will be used for other purposes and is therefore within the competence of the European Railway Agency (ERA), co-operation with ERA in this area was again called to mind. In addition, such co-operation is necessary because consideration must also be given to fitting other wagons with derailment detectors. For the future work, the working group considered it vital that ERA give its views on the use of telematics.

8. It was decided to continue to pursue developments concerning mechanical-pneumatic derailment detectors in Switzerland. At the next meeting of the working group, there should also be a discussion on electronic derailment detectors with industry representatives. National representatives were asked to let the Secretariat have the names of industry contacts who could be invited to this meeting.

43rd session of the RID Committee of Experts (Helsinki, 2 – 5 October 2006) (report OTIF/RID/CE/2006-A)

ITEM 4: Working group on tank and vehicle technology

Derailment detection

Document: A 81-03/504.2006, paragraphs 5 to 8

5. The representative of Switzerland explained that there would not yet be any results from the extended operational trial using modified derailment detectors as announced in document INF. CH 1 for the seventh session of the Working Group on tank and vehicle technology. Information should be provided by the manufacturer, Oerlikon-Knorr Eisenbahntechnik AG (OKE), at the working group's next session. As the RID Committee of Experts had decided to describe the objectives of derailment detectors in RID by 2009, at the next session of the working group, the manufacturers of derailment detectors should provide information on the extent to which the various systems are ready for use. The representative of Belgium in-

formed the meeting that the Belgian company Macq Electronique was interested in the research project on electronic derailment detectors.

2007

8th session of the RID Committee of Experts' working group on tank and vehicle technology (Munich, 14 and 15 June 2007) (report OTIF/RID/CE/GT/2007-A)

ITEM 2 a): Derailment detection

5. In a presentation (see document OTIF/RID/CE/GT/2007/1, English only), the representative of ERA set out the statistical data from 2004 and 2005**.** If the need to reduce the risk of derailments arose, ERA would investigate the following points:

   – construction, maintenance and inspection of rolling stock and infrastructure;

   – operating regulations;

   – requirements for staff training and the maintenance of professional competence;

   – the Organisation's safety management system and the regulatory systems;

   – hot axle box or derailment detection equipment on board the rolling stock or at the trackside.

   Currently ERA had no basis to initiate work on measures to reduce the level of risk of derailment. However, ERA would examine the most efficient and economic way to implement appropriate changes as part of the work on Technical Specifications for Interoperability (TSI), if consideration of the following points indicated the need to reduce risk:

   1. Is there any analysis of the need to reduce the risk of derailments involving dangerous goods, including comparison of the different transport modes?

   2. Would improvements in RID reduce the consequences in the event of a derailment?

   3. Is there documentation that calls for a reduction in the level of risk in the railway system – by how much?

   He added that in future, the Agency would also include a dangerous goods specialist among its staff.

6. The representative of ERA confirmed that there was no requirement for derailment detection in the TSI for freight wagons. In the presentation it was explained that the Agency has at present no reason to include this requirement in the TSI. According to this TSI, freight wagons for the transport of dangerous goods must also fulfil RID requirements. If the RID Committee of Experts decided to include requirements for derailment detectors on dangerous goods wagons in RID, then freight wagons for the transport of dangerous goods would have to fulfil these requirements.

7. The representative of Belgium was of the view that derailment detectors on individual dangerous goods wagons would only resolve part of the problem, as other wagons in the same train composition could derail without being detected and cause the derailment of other wagons. She also emphasised that container carrying wagons, which carried all types of containers, would not be fitted with detectors when dangerous goods were being carried.

8. In presentations given at the workshop on "telematics applications in the intermodal transport of dangerous goods", which had been held the day before the working group, representatives of Swiss Railways (SBB) and Oerlikon-Knorr Eisenbahntechnik (OKE) had explained

that the mechanical pneumatic derailment detectors with the modified tripping thresholds were no longer subject to false activation. In trials carried out with ONCF (Office national des chemins de fer du Maroc) in Morocco, it had been demonstrated that despite the modified tripping thresholds (9.0 +/- 2.5 g instead of 7.5 +/- 2.5 g), the derailment detectors tripped reliably. An accident in Cornaux (Neuchâtel) had shown that in accidents, derailment detectors could reduce the extent of the damage. In this particular accident, wagons without derailment detectors had derailed before the derailment detector on a following wagon tripped as a result of the damaged track.

9. The representatives of Belgium and Sweden were concerned that the original tests had not been carried out using the new tripping values. In addition, tests should be carried out using different train compositions and at different temperatures.

10. The representative of OKE pointed out that the new settings were also within the range of accelerations originally laid down by UIC. For this reason, UIC had also maintained the approval for the derailment detector with modified tripping values. However, he did concede that the upper threshold of 10 g that had originally been set would be exceeded at very low temperatures.

11. For the representative of Austria, the tripping of derailment detectors in tunnels still constituted a deficiency, as one would still have to wait until the derailment detector that had been activated had vented the main brake pipe. Only then would the detector return to its initial setting so that the train could leave the tunnel. However, it would only be possible to continue the journey after a derailment without the detector tripping again if the derailment detector were to be deactivated by closing the associated stop cock. The representative of Austria also doubted that forced braking was always the best solution if a derailment occurred. The presentations at the workshop had shown that the wagons concerned run very stably provided no other circumstances occurred to change this. Rapid braking, together with the accordion effect of the wagons could bring about such circumstances, while a locomotive driver who has been alerted could react appropriately to the situation.

12. Following this discussion, the working group recommended to the RID Committee of Experts to include provisions in RID 2009, in the context of a pilot project, for fitting tank-wagons/ battery wagons with derailment detectors, without prescribing specific systems (mechanical/ pneumatic, electronic). The locomotive driver had to receive a clear signal indicating that a derailment had occurred. The venting of the main brake pipe was considered to be a clear signal. This measure should only apply to new-build tank-wagons/battery-wagons for the carriage of certain groups of substances, which had yet to be established. However, before that could be done, it would have to be proved in trials that the derailment detector tripped reliably at speeds between 35 and 40 km/h. After two to four years, it should be checked what the effects of this pilot project were in practice and which groups of substances derailment detectors should be prescribed for.

13. The representative of Germany said he was prepared to draft a proposal along these lines for the RID Committee of Experts, but the working group should examine it first.

14. The representative of OKE assured the meeting that the necessary tests would be carried out as soon as possible, with the participation of the members of the working group.

15. The representative of Sweden feared that there might be false activations at low temperatures. His concerns were based on the stiffness of the sub-frame in conditions of severe frost. He asked for data established on the basis, for example, of tests or other investigations that confirmed that cold conditions did not cause false tripping (because of the associated disruptions to traffic and problematical recovery operations) and that the detectors also tripped reliably when a derailment occurred at low temperatures.

16. The representative of UIP saw the need for a long introductory phase in order to avoid a situation where only one manufacturer's products could be fitted.

Special meeting of the RID Committee of Experts' working group on tank and vehicle technology (Berlin, 12 October 2007) (report OTIF/RID/CE/GT/2007-B)

1. At the 8th session of the RID Committee of Experts' working group on tank and vehicle technology (Munich, 14 and 15 June 2007), it was agreed to carry out a derailment test to prove that the derailment detector trips reliably at speeds between 35 and 40 km/h (see paragraph 12 of report OTIF/RID/CE/GT/2007-A). In connection with this, a draft proposal from Germany was to be discussed. This proposal to the RID Committee of Experts proposed the inclusion in RID of a requirement to equip tank-wagons with derailment detectors (see paragraph 13 of report OTIF/RID/CE/GT/2007-A).

2. The derailment test was carried out by the Technical University of Berlin on 12 October 2007 on behalf of the manufacturers, Knorr-Bremse. Following the test, there was a discussion in the working group on tank and vehicle technology led by the deputy chairman of the working group, Mr A. Bale, United Kingdom.

3. The following States watched the test and took part in the discussions at this session: Germany, Italy, Netherlands, Sweden, Switzerland and United Kingdom. The International Union of Railways (UIC) and the International Union of Private Wagons (UIP) also took part (see Annex 1).

Presentation of the test and test results by the Technical University of Berlin

4. Professor M. Hecht (TU Berlin) reiterated the objective of the test performed, which was to demonstrate the functional capability of the EDT 101 and to gain knowledge of how wagons perform in the event of a derailment.

   The rear bogie of the tank-wagon to be derailed was placed on two assister rails, while the rest of the train (locomotive, barrier wagon, front bogie of the tank-wagon to be derailed and the following barrier wagon) ran on the normal rails. The assister rails were placed as close as possible to the normal rails in order to prevent lateral overriding of the buffers and the end of the assister rails were in the form of a ramp in order to guide the derailed bogie into the ballast bed as gently as possible.

   One test was carried out with all empty wagons and one with a loaded wagon between two empty barrier wagons. The test with all empty wagons was carried out the day before, 11 October 2007. The train composition reached 50 km/h when empty and 48 km/h with the loaded wagon.

   Accelerometers were fitted to the vehicle to be derailed so that the ideal position for the derailment detectors could be determined.

   In the test with empty wagons, the main brake pipe was opened by the derailment detector around 0.2 seconds after the derailment.

   The other main results of this test will be submitted in an informal document for the next session of the RID Committee of Experts.

5. With regard to the representative of Sweden's continuing doubt as to whether the EDT really fulfilled the requirements of UIC leaflet 541-08 in respect of low temperatures (-40 °C), Professor Hecht explained that the spring damper system of the ballast bed that was absent from the ground in permafrost conditions would partly be compensated for by the lower sensitivity of the EDT at low temperatures. However, the extent to which the EDT would compensate for this could not be confirmed.

Presentation of a draft proposal for the next session of the RID Committee of Experts by the representative of Germany

6. The representative of Germany introduced his draft proposal for the next session of the RID Committee of Experts, which had been sent to the working group participants before the meeting. He made clear that this was a simple proposal, which referred to UIC leaflet 541-08 with regard to the technical details. For the time being, it was only proposed that new-builds for certain dangerous goods should be fitted with derailment detectors, as not all aspects of this new technology were known yet. In order that the conformity of different systems could be assessed, a later date (1 January 2011) could be considered for the entry into force of this new requirement concerning fitment.

7. The representative of Switzerland said he would welcome an extension of this new requirement to all dangerous goods tank-wagons, perhaps with gradual implementation (1 January 2011 for very dangerous substances, 1 January 2013 for all dangerous substances) as in the case of energy absorption elements. In connection with this, he pointed out that in Switzerland, more than 600 dangerous goods tank-wagons had been fitted with derailment detectors since 2002 and thus sufficient experience in practice would be available. He pointed out that retrospective fitting would cost four to five times more than fitting new-builds with detectors.

8. Although the extension to all dangerous goods tank-wagons proposed by the representative of Switzerland was supported by some other delegations, the working group preferred at this stage to follow a more cautious approach on the basis of the draft German proposal, as there had not yet been enough experience with the EDT 101. However, the representative of Switzerland was asked to submit his further reaching request in an informal document for the RID Committee of Experts if he so wished.

9. In order to enable other systems to be developed and tested as well, the working group agreed that this new measure should be included in the 2009 edition of RID, but with a date of entry into force of 1 January 2011. As with special provision TE 22 (energy absorption elements), the new requirement for derailment detectors and the transitional provision should be restricted to tank-wagons for very dangerous substances carried in the liquid state and gases.

10. The manufacturer, Knorr-Bremse, considered that for derailment detectors, the same interval between inspections as for the maintenance periods for vehicles was sufficient. As the derailment detector would be a vehicle component, the inspection should be carried out as part of the vehicle maintenance and not as part of the periodic tank inspection.

11. Before the new requirements entered into force, locomotive drivers should be trained in what to do in the event of a detector tripping. In addition, the representative of Sweden considered that a provision should also be provided at that time specifying when the locomotive driver was allowed to deactivate the derailment detector in the event of a false activation.

44th session of the RID Committee of Experts (Zagreb, 19 – 23 November 2007) (report OTIF/RID/CE/2007-A)

ITEM 6: Working group on tank and vehicle technology

Detection of derailments

Documents: OTIF/RID/CE/GT/2007-A (Secretariat), paragraphs 5 to 16
OTIF/RID/CE/GT/2007-B (Secretariat)

88. The deputy chairman of the working group on tank and vehicle technology, Mr A. Bale (United Kingdom) gave a report on the special meeting of the working group (Berlin, 12 Oc-

tober 2007), which had been convened to witness a derailment test carried out by the Technical University of Berlin and Knorr-Bremse, and to discuss a draft proposal from Germany (see report OTIF/RID/CE/GT/2007-B).

Document: informal document INF.2 (Technical University of Berlin)

89. The representative of the Technical University of Berlin explained the test results set out in her informal document INF.2. The derailment tests were carried out in Berlin on 11 and 12 October 2007. In the test with empty wagons, a speed of 50 km/h had been reached, the derailment detector had tripped within 0.2 seconds and the derailed wagon had damaged 122 m of track. In the test with a loaded tank-wagon (the one to be derailed), a speed of 46 km/h had been reached, the derailment detector had tripped within 0.04 seconds and 71 m of track had been badly damaged.

90. The acceleration amplitudes had frequently been more than the tripping value required. From computer simulations with variables from other vehicles, it could be inferred that these would react similarly. The conclusion of the derailment test was that the EDT 101 derailment detector reliably detects a derailment and increases safety in rail transport considerably.

91. The representative of Knorr-Bremse replied to various technical questions put by some of the delegates:

    (a) It was decided to use empty vehicles to act as barrier wagons in front of and behind the wagon to be derailed, in order to reach as high a speed as possible.

    (b) A ramp was welded onto the additional rail on which the bogie to be derailed was running, in order to test the reliable tripping of the derailment detector under the more difficult conditions of a “soft” derailment.

    (c) As a result of the severe damage caused in the derailment test with the loaded wagon (overriding of buffers and derailment of the following empty wagon), the main brake pipe was wrenched off one second after the derailment, i.e. only after the derailment detector had tripped. However, it is presumed that a loaded wagon behind the derailed wagon would not derail and that the main brake pipe would have remained intact.

    (d) The derailment detector tripped when passing over the sleepers. The detector tripped more quickly with the loaded wagon than with the empty wagon, because the loaded wagon went down the ramp, while the empty wagon skipped over two sleepers after leaving the assister rail. In a derailment on rigid track, it is possible that the derailment would not be detected.

    (e) While the derailment detector with the original tripping values (7.5 +/- 2.5 g) produced 30 false activations, the derailment detector with the adjusted tripping values (9.0 +/- 2.5 g) no longer produced any false activations.

    (f) Wagons fitted with derailment detectors were also running outside Switzerland, especially towards Belgium and the Netherlands. Locomotive drivers were not specifically informed that the train composition contained wagons fitted with derailment detectors.

    (g) In a research project, it was demonstrated that the buffer beam was a suitable place to fit the derailment detector. Fitting it to the bogie could cause false activations as a result of being hit by stones and would make additional air pipes necessary.

    (h) In order to provide proof that the derailment detector also trips reliably at very low temperatures and that false tripping is ruled out (see comments by the representative of Sweden in report OTIF/RID/CE/ 2007-A, paragraph 15 and in report OTIF/RID/CE/2007-B, paragraph 5), it was planned to carry out a field test in Finland and Sweden in which

sensors would be fitted instead of derailment detectors. The data recorded by the sensors would be transmitted via telematics systems.

(i) No cases are known in which the derailment detector had to be changed because it kept tripping. An inspection at the normal inspection period for brakes seemed sufficient.

(j) When the derailment detector trips, the main brake pipe is completely vented. The valve on the derailment detector that opens the main brake pipe closes itself, so that the main brake pipe fills again. The duration of the refilling process depends on the performance of the locomotive's compressor and the length of the train but might typically be estimated at 20 minutes. Except in the event of automatic braking on bridges or in tunnels, the locomotive driver should check which derailment detector has tripped and make sure that no derailment has occurred before continuing his journey.

92. Summing up, the chairman noted that on the basis of the field trials carried out in Switzerland so far, the derailment detectors showed sufficient operating reliability for normal railway operations in central Europe. In theory, operational reliability also existed at very low temperatures, but this would still have to be demonstrated in operations (tests by Knorr-Bremse in Finland and Sweden). The detectors were calibrated down to -40 °C and would be less sensitive at low temperatures, which would be compensated by stronger impacts in the case of ballast beds in permafrost conditions. The tests in Berlin had dispelled the doubts the working group had concerning the functional capability of the derailment detector. These tests had shown that the detector tripped in a very short time, with both empty and loaded vehicles, and that this led to a reduction in energy before major damage was caused. For certain types of track (e.g. rigid tracks), it had not been established for sure that the derailment detector would trip.

Document: OTIF/RID/CE/2007/17 (Germany)

93. The representative of Germany introduced his document OTIF/RID/CE/2007/17. This document proposed to include a requirement in RID 2009 to fit derailment detectors to new-build tank-wagons and battery-wagons for the carriage of certain dangerous substances, but with a date of entry into force of 1 January 2011. He reminded the meeting that at the working group meeting in Munich on 14 and 15 June 2007, the representative of ERA had stated that ERA experts did not consider it necessary to introduce derailment detectors for wagons generally. Technical provisions that only apply to wagons for the carriage of dangerous goods, i.e. including the derailment detector, should continue to be laid down in RID. The representative of Germany explained that this proposal was in accordance with the RID Committee of Experts' decision of principle and was the result of many years work within the working group.

94. In a presentation, the representative of ERA explained his view of the correlation between the provisions of RID and the interoperability and rail safety directives. In particular, he pointed out that if two EU directives overlapped, an internal consultation process has to take place. In the case of real overlaps with the provisions of RID, this meant that at the request of the European Commission or the EU Member States, the internal EU consultation would have to be held before the decision of the RID Committee of Experts. In the context of this consultation process, ERA would check whether the proposal to prescribe derailment detectors for tank-wagons and battery-wagons for the carriage of certain dangerous substances was consistent with European Community legislation on interoperability. ERA's position statement and recommendation to the European Commission would of course include all the results of the RID Committee of Experts and of the working group on tank and vehicle technology that had been reached so far. This would also simplify the European Commission's approximately six month long decision-making process in the context of the Interoperability Committee and the Regulatory Committee for Dangerous Goods.

95. The Chairman recalled the decisions of principle that had been taken so far concerning the further development of dangerous goods law in Europe. In 1992, a landmark decision was taken in the RID/ADR Joint Meeting, together with the European Commission, according to which no standalone material dangerous goods law would be prescribed for the area covered by the European Community; instead, RID and ADR would be applied to intra-community and domestic transport. The procedure for implementing internationally adopted provisions for intra-community traffic had worked since 1997 and had been confirmed this year by the adoption of the new Framework Directive for the inland transport of dangerous goods. In principle, the law-making mandate of WP.15 and the RID Committee of Experts covered all issues whose purpose was to ensure safe transport by the respective modes, including, if necessary, requirements concerning vehicles in the event that such requirements were not set out sufficiently in general law (e.g. various requirements concerning the brakes on road vehicles). However, there were some interfaces that had to be taken into account. In road transport, for example, there were interfaces with the ECE regulations and EC law on base vehicles. The procedure whereby only the vehicle requirements specific to dangerous goods vehicles were laid down in ADR and for general provisions, the ECE regulations were referred to, had worked well for a long time and had on various occasions led to requirements that concerned the dangerous goods area becoming general requirements. In rail transport, such interfaces existed with the UIC leaflets and in future, with the Technical Specifications for Interoperability (TSIs). With regard to co-operation with ERA and the European Commission's Interoperability Committee, this meant that the RID Committee of Experts would continue to work independently and would continue to lay down European law, in so far as this was necessary to ensure safety in rail transport. The exceptions to this would be requirements that had already been technically decided and covered in the TSIs or which were of general significance and which would have to be dealt with by ERA alone or in co-operation with the RID Committee of Experts. In particular, requirements concerning wagons not carrying dangerous goods or concerning the entire train composition would have to be dealt with in the consultation process described by the representative of ERA. However, the fact that a requirement under dangerous goods law affected the organisation or railway operations was not sufficient cause for consultation.

96. The representative of the European Commission confirmed what the chairman had said. He emphasised that there was no intention of reallocating competencies, but of avoiding conflicts between the TSIs and RID by working together. He conceded that the consultations should have been started earlier, rather than at the end of a lengthy process of work in the RID Committee of Experts, but he asked people to understand as well that ERA had only been able to start its work recently. In the event of overlaps, the view of the Interoperability Committee should in future be introduced to the RID Committee of Experts in good time.

97. The representative of CIT drew the meeting's attention to a legal study carried out on behalf of his organisation which concluded that COTIF law took precedence over Community law, as it applied over a wider geographical area (see http://www.cit-rail.org/PDF_doc/d/Rechtsstudie_060406202.pdf). There was a risk that the procedure suggested by ERA might lead to legal uncertainty.

98. The Chairman regretted that with its letter of 16 November 2007 to him and to the EU Member States as well as to Norway and Switzerland, the European Commission had introduced an unreasonable degree of acrimony into the debate, instead of seeking co-operation. In its letter, the Commission had asked that the RID Committee of Experts' decision on the introduction of derailment detectors be deferred and had threatened to apply Article 3 § 3 of the Rules of Procedure. In contrast, since ERA's inception, the RID Committee of Experts had actively sought to co-operate with it and wished to continue doing so.

99. For the future, he proposed the following approach: in principle, the RID Committee of Experts would form the competent body for dealing exclusively with provisions concerning the carriage of dangerous goods by rail. The RID Committee of Experts would forward all initiatives of general relevance to rail transport to ERA or would deal with such initiatives only af-

ter consultation with ERA (see also decision of the RID Committee of Experts on the end of train device in paragraphs 86 and 87). With regard to matters relating to vehicle technology that are only relevant to the carriage of dangerous goods, ERA should point up any interoperability problems in good time, initiate the consultation process required in the European Commission and provide the RID Committee of Experts with feedback from the work carried out by ERA and the Interoperability Committee. This way of working would also help the reduction of bureaucracy initiated as a result of the new Framework Directive on the inland transport of dangerous goods. In order to ensure good co-operation, he thought it would be a good idea if a representative of ERA were always to take part in the RID Committee of Experts.

100. The representative of the European Commission welcomed this proposal and assured the meeting that this subject, which might also be of interest to the other transport modes, would be placed on the agenda of the next meeting of the Dangerous Goods Regulatory Committee (Brussels, 30 November 2007). To this end, the Secretariat would provide him with an advance extract of the draft report.

101. With regard to how to proceed in relation to the derailment detector, the Chairman proposed to take a provisional decision on the use of derailment detectors at this session of the RID Committee of Experts, as announced (see paragraph 15 of the report of the 41st session of the RID Committee of Experts (document A 81-03/511.2004)), but only to implement this decision in the 2011 edition of RID. This would allow ERA to carry out the necessary consultations in the meantime and to come back to the decision, if need be, at the next session of the RID Committee of Experts. At the same time, the result of the field trial anticipated by the manufacturer concerning the functioning of the derailment detector at low ambient temperatures (Sweden, Finland) could also be incorporated.

102. The representative of the European Commission thanked the Chairman for this compromise and said he was pleased not to have to apply Article 3 § 3 of the Rules of Procedure. He explained that for the vote that would now follow, the European Commission's letter was no longer valid.

103. The document submitted by Germany, as amended on the basis of the Secretariat's compromise, was put to the vote and was adopted (9 in favour, 9 abstentions) (see Annex 1).

104. The Chairman offered to participate at the next meeting of the Interoperability Committee in order to report to it on the work, investigations and results carried out so far.

Document: informal document INF.6 (Switzerland)

105. Owing to the compromise that was reached, Switzerland's informal document INF.6, which contained Switzerland's position on the European Commission's e-mail of 7 November 2007 to the EU Member States, was not dealt with.

ITEM 9: WORKING GROUP ON STANDARDIZED RISK ANALYSIS

Document: OTIF/RID/CE/2007/3 (Switzerland)

117. The representative of Switzerland introduced his report OTIF/RID/CE/2007/3 on the fourth session of the working group on standardized risk analysis which was held in Ittigen on 23 and 24 April 2007 at the invitation of Switzerland. The aim of the meeting had been to present the risk analysis methods used in Switzerland. Using the example of Zurich-Oerlikon station, it had been demonstrated that the introduction of derailment detectors in Switzerland had led to a reduction of the risk.

2009

10th session of the RID Committee of Experts' Working Group on Tank and Vehicle Technology (Brussels, 11 and 12 June 2009) (report OTIF/RID/CE/GT/2009-A)

ITEM 2: Derailment detectors

Information on the status of negotiations with the European Commission's Railway Interoperability and Safety Committee and the European Railway Agency (ERA)

Documents: OTIF/RID/CE/GT/2009/3 (Germany)
informal document INF.3 (Knorr-Bremse)

5. In his presentation contained in informal document INF.3, Dr Walter (Knorr-Bremse (Knorr Brakes)) informed the meeting about the tests on the EDT 101 derailment detector that had been carried out at the request of Sweden and Finland between January and April 2009 at low ambient temperatures. In the tests, five tank-wagons had been fitted with derailment detectors and a GPS/GSM unit. During the tests, the average temperature recorded was -15°C; temperatures of ≤ -25°C were only reached on three days during the test period. A written report on the tests, during which no false tripping of the detectors was noted, will be finalised in autumn 2009 and submitted to the RID Committee of Experts.

6. In document OTIF/RID/CE/GT/2009/3, the representative of Germany provided information on the discussions in the European Commission's Railway Interoperability and Safety Committee on the subject of derailment detection and on the discussion with members of the RID Committee of Experts of the draft report submitted by ERA. He regretted that the chairman of the RID Committee of Experts had not been invited to the Railway Interoperability and Safety Committee's concluding meeting on Friday, 12 June 2009.

7. The representative of ERA pointed out that at the meeting held in Lille on 2 April 2009 with representatives of the European Commission, ERA and the RID Committee of Experts, the general approach of ERA's investigation had not been called into question, while there had been different views on ERA's recommendation. He explained that the comments made at that meeting and those that various States had submitted in writing had been taken into account in the final version of the report.1 The European Commission's final decision on the report would now take place at political level, firstly in the Railway Interoperability and Safety Committee (12 June 2009) and secondly in the Transport of Dangerous Goods Committee (6 July 2009)2.

8. Among others, the following points were emphasised in the subsequent discussion:

   – As there were only a few derailments where dangerous goods were involved, the database used was insufficient to provide reliable statistics.

   – It was acknowledged that there was a certain contradiction in that ERA was not making a recommendation for the detection of derailments in the transport of dangerous goods, while at the same time, the TSI High Speed Rail System required the rapid detection of derailments.

---

[1] ERA's recommendation on derailment detectors is available under http://www.era.europa.eu/core/Safety/Documents/our_products/nsr/Agency%20recommendation%20on%20Derailment%20Detection%20Devices.pdf and the accompanying report on the impact assessment is available under http://www.era.europa.eu/core/Safety/Documents/our_products/nsr/ERA-REP-03-2009-SAF%20Public.pdf.

[2] See also the new wording of this paragraph proposed by the representative of ERA (Annex 1).

– The causes of derailments should be investigated in parallel (e.g. condition of the infrastructure, condition of the rolling stock, human error). However, this went beyond the sphere of competence of the RID Committee of Experts and its working group.

– It was incomprehensible why fully developed technology could not be employed throughout Europe, even though it could already be demonstrated that this technology can reduce the extent of accidents (Cornaux/Switzerland).

– In addition to the Knorr-Bremse company, there were now two other suppliers of derailment detectors, but these have not yet been UIC approved. In addition, a fourth supplier was intending to develop a derailment detector which, instead of measuring vertical oscillation, would measure the geometry of the tracks and wheels. This emerging competitive situation could lead to lower prices and earlier amortisation than assumed in the study.

9. The representative of ERA explained that in its report, ERA was not calling the derailment detector into question, but had emphasised that before derailment detectors were made mandatory, derailment prevention would have to be better investigated. As railway undertakings would have to carry out a risk assessment, this could lead to the voluntary fitting of derailment detectors at national level. This was possible under conditions to be laid down by the national safety authority. He pointed out that underpinning ERA's investigation was an amortisation period of seven years, while the costs of overhauling and false alarms had not been taken into account.[2]

10. The working group agreed that there must be no further technical discussion in the working group so that the political decision to be taken by the RID Committee of Experts could be prepared.

Annex 1 of report OTIF/RID/CE/GT/2009-A): Proposals for amendments submitted by the representative of ERA

7. should read as follows:

"7. The Representative of ERA pointed out that the Document OTIF/RID/CE/GT/2009/3, and in particular the points 2, 4, 5 and 6, did not report correctly the discussions and/or the conclusions of the informal meeting held in Lille on the 2nd of April with representatives of the European Commission, ERA and some interested RID experts (DE, FR, SP, UK), CEFIC, UIC, UIP and UNIFE. On contrary to what is reported in the above mentioned document, ERA emphasized the following:

– The impact assessment methodology was not called into question but clarifications on the impact assessment lead all the parties to conclude on the good quality of this assessment, including explanation on the way statistics have been established and used, taking well into account uncertainties. In particular it was recognized that the potential DDD benefits were overestimated by the study.

– The cost-benefit analysis of the proposed RID provision leads to negative conclusions as it is necessary to interpret the raw quantitative results in order to take into account extra-costs not directly counted in the raw results.

– All the comments received by the Agency were reported to the European Commission in the consultation report. Taking due consideration of all the comments received by ERA only clarifications were reported in the impact assessment report which is now finalized. On this basis the Agency recommendation on the RID provision is confirmed.

The European Commission's discussions on the ERA recommendation would now take place at political level, firstly in the Railway Interoperability and Safety Committee (12 June 2009) and secondly in the Dangerous Goods Regulation Committee (6 July 2009)."

9. should read as follows:

"9. The representative of ERA re-affirmed that the impact assessment demonstrated, when applying EU principles and requirements, that it is not necessary and it would cause legal problems to adopt the RID provision on DDD. As a result of the assessment, the ERA proposed to firstly study the possible ways to better prevent the freight train derailments to occur, in particular potential interest for the sector has also been demonstrated. However the question of general reduction of freight train derailment with the DDD is out of the scope of the RID Committee responsibility and not considered as a possible option by ERA due to unsolved problems with the DDD."

47th session of the RID Committee of Experts (Sofia, 16 – 20 November 2009) (report OTIF/RID/CE/2009-A)

ITEM 8: working group on tank and vehicle technology

Derailment detectors

Document: informal document INF.9 (European Commission)

112. In informal document INF.9, the European Commission requested on behalf of the European Community that the amendments in document OTIF/RID/CE/2009/11 to 1.6.3.x, Chapter 3.2, Table A, column (13) and to 6.8.4 (b), special provision TE xx, adopted in square brackets, be deleted and only be included in the 2013 edition of RID. In so doing, the statement in the text of new special provision TE xx that venting of the main brake pipe is considered as a clear signal for a derailment should be deleted. In addition, the reference in TE xx to UIC leaflet 541-08 should be replaced by a reference to the technical specifications for interoperability (TSI), although the representative of the European Commission agreed that in RID, in contrast to the TSI, an additional reference to the UIC leaflet could be maintained.

113. The representative of the European Commission explained that informal document INF.9 set out the conclusions of a joint meeting of the Transport of Dangerous Goods Regulatory Committee and the Rail Interoperability and Safety Committee (RISC) and that it was necessary in order to maintain compatibility between RID and the TSIs. The two years that would be made available by this postponement would be used to carry out the studies listed in the Annex to informal document INF.9 by the end of 2011, the results of which the European Commission would bring to the attention of the RID Committee of Experts nearer the time.

114. The Secretariat pointed out that the TSIs were only binding on the EU Member States and that in addition to the TSIs, there should also be a reference to the technical Appendices of COTIF and the uniform technical provisions they contained. The RID Committee of Experts mandated the Secretariat to complete the reference accordingly (see Annex I).

115. The representative of Switzerland pointed out that introducing derailment detectors had been the subject of discussions for more than ten years and extensive trials had already been carried out in Switzerland, Germany and Sweden. The list of studies in the Annex to informal document INF.9 should not be considered as a prerequisite for being able finally to introduce provisions for derailment detectors in RID in 2013.

116. The chairman reminded the meeting that the European Community's legislative competence in the rail sector meant that there were repercussions for RID. This meant that the range of tasks of the various bodies would have to be defined more clearly in order to establish the areas in which decisions could be taken independently and those where there would have to be cooperation. At the same time however, he regretted that the European Commission was attempting to maintain the status quo in terms of the level of safety, while on the basis of careful accident analyses, the RID Committee of Experts had established the need to improve the level of safety.

117. The RID Committee of Experts reinforced its aim of including provisions for the detection of derailments in RID, but agreed to defer the entry into force of the provisions for two years. The working group on tank and vehicle technology was asked to check and update the texts adopted in square brackets in the light of past and future ERA studies. In so doing, the working group should in particular examine whether, against the background of ERA's investigations so far, the detection of derailments should also be prescribed for other dangerous substances in order to increase the benefit for the railway infrastructure (less damage to assets, shorter line closures, etc.).

Annex I: Texts adopted by the 47th meeting of the RID Committee of Experts

C. Amendments for entry into force on 1 January 2013

Add the following new transitional measure:

["1.6.3.x Tank-wagons and battery-wagons

– for gases of Class 2 with classification codes containing the letter(s) F, T, TF, TC, TO, TFC or TOC, and

– for substances of classes 3 to 8 carried in the liquid state and to which tank code L10BH, L10CH, L10DH, L15CH, L15DH or L21DH is assigned in column (12) of Table A of Chapter 3.2,

constructed before 1 January 2013 which do not, however, conform to the requirements of 6.8.4 (b) concerning special provision TE xx applicable from 1 January 2013 may continue to be used."**]**

[Chapter 3.2

Table A In **column (13)**, insert "TE xx" in the following cases:

– for tanks for gases of Class 2 with classification codes containing the letter(s) F, T, TF, TC, TO, TFC or TOC, and

– for tanks for substances of classes 3 to 8 with tank code L10BH, L10CH, L10DH, L15CH, L15DH or L21DH.**]**

[6.8.4 (b) Insert the following new special provision TE xx in 6.8.4 (b) (left-hand column only):

"**TE xx**	Tank-wagons for substances carried in the liquid state and gases, and battery-wagons shall be equipped with a detection device that provides an immediate and clear signal to the **[**locomotive driver**]** that a derailment has occurred. This device shall meet the requirements of the relevant technical specifications for interoperability (TSI) and OTIF's uniform technical prescriptions (UTP) (wagons,

operation, tunnel safety)."**]**

2010

11th session of the RID Committee of Experts' working group on tank and vehicle technology (Berne, 18 and 19 May 2010) (report OTIF/RID/CE/GT/2010-A)

Item 2: Derailment detection

5. At the request of the European Commission, the RID Committee of Experts had decided at its 47th session to defer by two years the introduction of provisions into RID concerning the detection of derailments, which it had initially been planned to include in the 2011 edition of RID. The two year deferment period should be used to carry out by the end of 2011 the studies relating to the prevention or detection of derailments that would be undertaken by the European Commission and the European Railway Agency (ERA), the results of which should be communicated to the RID Committee of Experts (see also paragraphs 112 to 117 of the final report OTIF/RID/CE/ 2009-A of the 47th session of the RID Committee of Experts).

6. The representative of ERA informed the working group that the Agency had launched the technical studies listed in the annex to informal document INF.9 of the 47th RID Committee of Experts' meeting (details are given in informal document INF.4 of the 48th RID Committee of Experts' meeting). The studies on decision-making processes in the context of safety/interoperability directives and RID, and the feasibility study on harmonising risk acceptability criteria would be carried out by the Commission services. He added that for the time being, there were no interim results to communicate to the working group.

7. The representative of Germany asked the European Commission and ERA to confirm that the studies currently being carried out by ERA would really in fact lead to provisions on the detection of derailments being included in the regulations in 2013. The representative of ERA reminded the working group that the results of the studies should be discussed in 2012 by the Joint EC Committee on Railway Safety and on Transport of Dangerous Goods in order to update and complement the EU position on freight train derailments, including TDG trains. Therefore, ERA could neither anticipate the result of the studies nor the result of these discussions. He explained that the Agency was looking at the question of derailment from a global perspective. It was not just studying the various systems for detecting derailments and their effectiveness, it was also analysing the causes of derailments and the possibilities for mitigating and preventing the derailment of freight trains.

8. The representative of Germany drew attention to the fact that introducing provisions on the detection of derailments had been postponed because, among other things, the European Commission and ERA had claimed that the existing derailment detection systems did not function satisfactorily. He asked what the European Commission was doing to eliminate the disadvantages of the existing systems and to promote alternative systems. He emphasised that it was essential to avoid postponing the introduction of provisions on the detection of derailments again if alternative systems were still not available in 2012. The representative of Switzerland shared Germany's concerns and asked the European Commission to define clearly the requirements that derailment detection systems had to meet. The representative of UNIFE supported this request and explained that the industry would not work on developing any new systems until the objectives had been clearly defined. In addition, the time needed to carry out tests and to complete the approval procedure would have to be taken into account.

9. The representative of Germany said that based on the moderately positive result of ERA's cost/benefit analysis concerning derailment detectors, ERA was asked to check whether it was not rather counter-productive, in terms of making progress in the work, to limit application of derailment detectors only to freight wagons carrying very dangerous substances and whether it should not be extended to all freight wagons carrying dangerous goods. The rep-

resentative of ERA stated that ERA would inform the working group as soon as possible about available results from the derailment studies.

10. The working group invited the industry representatives to check whether and how the problem of the automatic braking of a train after a derailment is detected could be eradicated. The representative of UNIFE explained that if the driver had to be informed immediately of the derailment so that he could decide himself which was the best place to stop the train, the same technology should be used on freight trains as is already used on high-speed trains. However, the basic conditions for this system to function would be that all freight wagons would have to have an electricity supply and data transmission equipment.

11. The chairman asked the representative of ERA to keep the working group and the RID Committee of Experts informed of progress on the studies on the detection of derailments and asked the industry to continue to give thought to the different technical solutions. The representative of ERA invited the States and the industry to participate actively in the consultations that were being held in connection with the studies on the detection of derailments.

49th session of the RID Committee of Experts (Luxembourg, 2 - 4 November 2010) (report OTIF/RID/CE/2010-B)

ITEM 7: Information from the European Railway Agency (ERA)

Document: informal document INF.2 (ERA)

Derailments

42. The representative of ERA reported that in the context of the studies on the detection of derailments, the contractor, Det Norske Veritas (DNV), was now collating the safety measures implemented by various railway undertakings and infrastructure managers to prevent derailments or to mitigate the effects of a derailment. Information on all the products available on the market was also being gathered.

43. The chairman reminded the meeting that the decision to introduce derailment detectors had been postponed at the request of the European Commission and that the European Commission would have to enable the RID Committee of Experts to take a decision by November 2011 so that it could be taken into account in the 2013 edition of RID. He emphasised that it was important that DNV also obtain information from those who had dealt extensively with issues surrounding derailment detection in the past (e.g. Knorr-Bremse, UIC railway undertakings and those who used derailment detectors on a voluntary basis (SBB, Wascosa)). Accident investigations should also be encompassed (e.g. the derailment of a train with tank-wagons containing chlorine on 28 February 2005 in Ledsgård (Sweden), the rail accident in Viareggio).

44. The representative of ERA explained that the study results should be available by June 2011. This input would be used by ERA to prepare an impact assessment and a recommendation which should be addressed to the European Commission by March 2012, in accordance with the initial planning (see informal document INF.9 of the 47th session of the RID Committee of Experts).

45. The representative of UNIFE pointed out that according to information received from Wabtec MZT in Macedonia, it had obtained UIC approval for its own derailment detector, which was very similar to the one produced by Knorr-Bremse.

46. The representative of ERA was asked to present the interim results of the study at the next meeting of the working group on tank and vehicle technology planned for October 2011.

2011

12th session of the RID Committee of Experts' working group on tank and vehicle technology (Hamburg, 6 and 7 October 2011) (report OTIF/RID/CE/GT/2011-A)

Item 3: Detection of derailments

6. It was recalled that ERA had held two workshops in Lille on the study on the prevention and detection of derailments produced by Det Norske Veritas (DNV) (6 May 2011 and 29 September 2011). At the last workshop, ERA asked to receive comments on the reports DNV had produced so far within two weeks.

7. Part B3 of the study sets out and compares the ten safety measures which DNV considered to be the most efficient. Preventive measures which prevent a derailment were in the top part, and in contrast, measures which minimise the effects of derailments were in the middle part. In the comparison between whether to equip with derailment detectors all freight wagons, all dangerous goods wagons or all wagons determined by the RID Committee of Experts for the carriage of the most dangerous goods, it emerged that the selection made by the RID Committee of Experts demonstrated the best cost-benefit ratio.

8. The representative of Germany pointed out that the three measures listed in Table 9 above the derailment detector for certain RID wagons only concerned the rolling stock, not the infrastructure. This meant that a large number of infrastructure measures had a worse cost-benefit ratio. He therefore asked whether it would not be sensible to maintain the decision of the RID Committee of Experts in order to intercept derailments caused by the infrastructure. In general, a combination of different measures should also be considered.

9. As the various measures proposed each concerned all freight traffic, but only some of them were relevant to the transport of dangerous goods, the question arose as to what the order of priority would be for dangerous goods transport.

10. The representative of UIC drew the meeting's attention to three points. The first concerned the efficacy of the various preventive measures proposed in Part B3 of the study in conjunction with Annex B2 of the study, which showed the list of derailments taken into account in the DNV study. It was not the intention to call into question the risk model, but it was important to note that in practice, the efficacy of the preventive measures would vary from country to country, as they had been developed on the basis of average values, while the proportions of the causes of derailments differed depending on the country.

11. UIC's second comment concerned paragraph 11.0 of B3 of the study, particularly point 11.2.2, which dealt with protective measures. DNV's conclusions and recommendations only concerned measure M1a – Derailment detectors on all freight wagons. There was no conclusion or recommendation concerning protective measures M1a – Derailment detectors on all dangerous goods wagons and M1a – Derailment detectors on wagons for very dangerous substances as defined by the RID Committee of Experts, and no justification was given for this lacuna. However, in the cost/benefit analysis, these two measures were more interesting.

12. The third comment concerned the efficacy of measure P13 – WLID/WIM for the carriage of dangerous goods. This measure seemed less attractive for tank-wagons than for other freight transport. However, this did not mean that the measure was of no use for tank-wagons, as the device enables the detection of defects on a vehicle other than possible loading anomalies. It would be worth examining more closely the efficacy of this measure for the safety of dangerous goods transport.

13. Various delegations pointed out that for some countries which already had a high density of fixed installations, e.g. hot box detectors, measures involving the rolling stock might be inter-

esting in order to improve safety. The political aspect of this problem was also referred to, as the general public did not understand why sometimes derailments are not noticed and why derailments with serious consequences continue to occur, even though derailment detection technology is available.

14. With regard to the comment in brackets in paragraph 5.3.1.3 of part B3 of the study ("Additional benefits could be for example requiring a lesser density of installation of HABD"), the working group advised great caution, as these detection devices were used not just to establish defects in the roller bearings, but also to establish whether the brakes had locked. It was suggested in the working group that in the DNV report, refitment with plastic bearings and other measures that already exist should be addressed and assessed more clearly.

15. With regard to paragraph 11.2.2 of part B3 of the study, the representative of UNIFE observed that false alarms were only mentioned in connection with derailment detectors, although these may be of significance in connection with all the other measures. With the new derailment detectors with higher trigger thresholds, no false alarms had been recorded since 2004, so the negative effects of a false alarm referred to in the study were no longer relevant. He also asked the meeting to consider whether prior indication to the driver's cab that a derailment had occurred would cause the driver to act differently, as in such cases the transport undertaking would by no doubt prescribe that the train be brought to an immediate halt.

16. As no further information would be available until November, it was recommended that the 50th session of the RID Committee of Experts should only discuss this briefly. At the next meeting but one of the RID Committee of Experts, there should then be a discussion on the possible inclusion of other dangerous goods and a date for introducing derailment detection. As a single measure did not seem appropriate to reduce the risk of derailments significantly, the RID Committee of Experts should not be prevented from taking a decision in favour of derailment detectors.

50th session of the RID Committee of Experts (Malmö, 21 - 25 November 2011) (report OTIF/RID/CE/2011-A)

Detection of derailments

59. The representative of ERA explained that DNV had concluded its work and that comments on the DNV report had been received from various States and associations and from the working group on tank and vehicle technology. These comments would be processed in connection with drafting a recommendation for the European Commission, and in addition to the DNV report, other findings would also be taken into account.

60. The RID Committee of Experts asked that the subsequent consultations at European level be held in a joint meeting of the RISC and Dangerous Goods Regulatory Committees. The representative of ERA confirmed that this was envisaged.

Joint declaration of June 2002

Document: OTIF/RID/CE/2011/6 (Switzerland)

61. Document OTIF/RID/CE/2011/6 submitted by the representative of Switzerland recalled the joint declaration signed on 27 June 2002 by the Federal Department of the Environment, Transport, Energy and Communications (DETEC), the Swiss Association of Chemical Industries (SGCI) and Swiss Federal Railways (SBB) in which the three parties committed themselves to reducing the risks inherent in the transport of dangerous goods on the territory of the Confederation by implementing specific measures.

62. He noted that since the end of 2010, almost all chlorine imports into Switzerland were carried in tank-wagons which met the provisions included in RID since the declaration had been signed. The transitional periods allowed in the regulations had thus been bettered. Pending the RID Committee of Experts' decision on fitting derailment detectors to tank-wagons for the carriage of very dangerous substances, he was pleased to note that a Swiss freight wagon hire company had already equipped all its freight wagons with derailment detectors.
63. The RID Committee of Experts noted this information.

2012

13th session of the RID Committee of Experts' working group on tank and vehicle technology (Rome, 11 and 12 April 2012) (report OTIF/RID/CE/GT/2012-A)

Documents: informal documents INF.5 (ERA)
INF.6 (ERA)

5. With the help of his presentation in informal document INF.6, the representative of the European Railway Agency (ERA) explained the report in informal document INF.5 on the short and medium term prevention and reduction of freight train derailments. Among other things, the report took into account the findings of the study carried out by Det Norske Veritas (DNV) and of the task force set up after the accident in Viareggio to look at the maintenance of freight wagons.

6. He explained that in total, 47 preventive measures, 13 measures to reduce the consequences of a derailment and 9 measures which are not yet feasible had been examined in detail.

7. The report was underpinned by investigations into a total of 555 derailments, data on which had partly been collected by ERA in 2009 and supplemented by the DNV's survey. The accident in Viareggio had also been taken into account, although in ERA's view, that had not been a typical derailment.

8. ERA's conclusions were arranged into short, medium and long term measures. The most effective short term measure was considered to be the correct implementation of the safety management and maintenance system already prescribed in EU Directives, which in itself would prevent up to 26% of derailments.

9. Among the medium term measures, four technical measures would have the potential to prevent or reduce derailments more effectively than derailment detectors. These were detectors to establish uneven weight distribution and defective wheel profiles, bearing acoustic monitoring detectors, detectors to establish the atypical dynamic behaviour of wheelsets and the introduction of roller cages made of polyamide.

10. In accordance with the principles established in EU legislation, none of these measures should be made mandatory at European level; instead, it should be up to the sector which measures are introduced voluntarily on the basis of the safety management system.

11. The ERA report reiterated its recommendation to the European Commission not to require the use of derailment detectors in EU legislation, and in turn not to require them in RID, because it was clearly demonstrated that other measures are far more effective in reducing the risks inherent in the carriage of dangerous goods, including catastrophic consequences. There was therefore no reason to promote the derailment detection measure above other more effective measures.

12. Nevertheless, as for the other technical measures that had been assessed, the ERA representative reminded the meeting that it was still possible to use the derailment detectors currently available on the market on a voluntary basis, if authorised by the authority in charge of

granting the “placing into service” of wagons equipped with these systems. However, it should be clear that wagons without derailment detectors should not be prevented from operating. In addition, it was not excluded that in the longer term, ERA might carry out a new investigation on using electronic derailment detectors.

13. Irrespective of this, longer term measures should also be considered, e.g. the introduction of central coupling, combined with the possibility of data transmission and energy supply and the collection and exchange of specific, real-time data on the quality of wagons and tracks. Since October 2011, a research project on this commissioned by the European Commission’s Directorate-General Research, Technological Development and Innovation had been underway.

14. In the discussion that followed, the following criticisms on the ERA report were voiced:

– ERA’s argument that the mandatory introduction of technical measures might result in the modal shift of traffic to the roads because of the economic burden would only apply to other measures, particularly the long term measure of introducing central coupling.

– As a result of the fact that combinations of different causes of derailments had not yet been sufficiently investigated in theory, and from practical experience, specifically with reference to the durability of individual parts, it would have to be concluded that derailments could also continue to occur at a considerable frequency and perhaps with catastrophic consequences if dangerous goods were being carried. Therefore, it was at least necessary to minimise the consequences of derailments, which was currently only possible with mechanical derailment detectors.

– Even if the accident in Viareggio were considered as an atypical derailment, the accident had had the effect in Italy of moving dangerous goods transport operations, to a great extent, onto the roads. Between the moment the derailment occurred and the overturning of the wagon after 370 m, a derailment detector would at least have been able to reduce drastically the kinetic energy. As the available kinetic energy had been the determining factor for the damage to the tank wall, there would have been a better chance of deformation, rather than puncturing.

– The claim that the false activation of a derailment detector might lead to a derailment did not reflect the reality of what happened in an accident and was purely speculative. Moreover, since the activation thresholds had been adjusted in 2006, no more false activations had been experienced.

– As the four measures proposed could not rule out all derailments and the highly rated detectors for establishing uneven load distribution were particularly useless in this respect, derailment detectors should be prescribed for dangerous goods wagons in order to minimise the remaining risks. Various delegates referred to car construction as an example in this context, where, despite numerous objections when they were introduced, safety systems such as airbags and safety belts are used very effectively.

15. The representative of Italy referred to the recommendations made by the Italian Accident Investigation Authority in informal document INF.3, which also included fitting derailment detectors to older wagons. In his view, derailment detectors should not be limited to new builds for purely economic reasons.

16. The chairman drew the working group’s attention to the fact that to his knowledge, in the last four years, operators of tank-wagons for the chemical industry had fitted derailment detectors to all new build tank-wagons for the carriage of the very dangerous substances identified by the RID Committee of Experts on a voluntary basis. Even if no mandatory requirement were introduced into RID, it should be assumed that this practice would continue.

17. The representative of Germany reminded the meeting that as in the past, the RID Committee of Experts was obliged to learn lessons from serious accidents such as the one that had occurred in Viareggio. He recalled that a road traffic accident in Los Alfaques (Spain) on 11 July 1978 had led to permanent changes in the provisions of ADR. This had also entailed costs for road transport, but had not caused any negative changes in the modal split. Serious accidents that continued to occur in all transport modes showed that any remaining residual risk in the dangerous goods area had to be considered more intensively than for other goods. In his capacity as chairman of the RID Committee of Experts, in the event that the mandatory use of derailment detectors in RID was rejected, in order to avoid a negative effect on competition against the background of the so far voluntary fitting of derailment detectors to tank-wagons, he asked the Member States and ERA at least to think about a provision on fitting derailment detectors in RID to make matters clear, so that initially at least, legal certainty could be achieved for voluntary fitting.

18. In an indicative vote, four Member States supported implementing the decision endorsed by the 47th session of the RID Committee of Experts (Sofia, 16 – 20 November 2009) to introduce derailment detectors. Two Member States preferred implementation on a voluntary basis. Two Member States abstained.

Item 3: Accident reports

Document: informal document INF.3 (Italy)

19. Based on his presentation in informal document INF.3, the representative of Italy introduced the final report of the railway accident that occurred in Viareggio on 29 June 2009. While it had been possible to determine what had caused the accident, investigations into the question of the object that had perforated the tank were still pending. The Italian accident investigation authority had drafted 11 recommendations in all, ten of which concerned international legislation.

20. The recommendations in detail:

(…)

Recommendation 10:

Derailment detectors on all dangerous goods wagons, but false activation of derailment detectors should be eliminated. Wagons moved in a train with dangerous goods wagons should also be fitted with derailment detectors. Older wagons should be fitted first, while for new builds, more developed detectors could be used.

(…)

51st session of the RID Committee of Experts (Berne, 30 and 31 May 2012) (report OTIF/RID/CE/2012-A)

Document: OTIF/RID/CE/GT/2012-A, paragraphs 5 to 18
INF.15 (Secretariat)
INF.17 paragraphs 3 to 19 (ERA)
INF.18 (European Union)

10. In its informal document INF.15, the secretariat recalled the discussion at the 47th session of the RID Committee of Experts (Sofia, 16 to 20 November 2009) on the introduction of provisions for derailment detectors, and the provisions contained in square brackets in report OTIF/RID/CE/2009-A, which it was planned would enter into force on 1 January 2013.

11. The chairman of the working group on tank and vehicle technology referred to the discussions on the detection of derailments reflected in the report of the 13th session of the working group (OTIF/RID/CE/GT/2012-A, paragraphs 5 to 18) and emphasised that in an indicative vote, four Member States had supported the decision endorsed by the 47th session of the RID Committee of Experts to introduce derailment detectors. Two Member States had preferred implementation on a voluntary basis, and two other Member States had abstained.

12. The representative of the European Commission explained that the result of coordination among the EU Member States had been that at present, the European Union did not support the mandatory introduction of derailment detectors, but the use of derailment detectors on a voluntary basis should be made possible.

13. The chairman added that further investigations were to be carried out, particularly on using telematics applications to help detect derailments, so the European Union's decision should not be considered as final.

14. The representative of Switzerland reminded the meeting that in recent years, his country had played a major role in the discussions on the detection of derailments. A negative decision by the European Union, which had only been submitted in the form of an informal document at the beginning of the RID Committee of Experts' session, was unacceptable, and would call into question Switzerland's future participation in the work of the RID Committee of Experts. In order that this work, which had lasted ten years, could at least be brought to a conclusion in a clear manner, he requested a nominal vote in accordance with Article 21 § 2 of the Rules of Procedure, so that each Member State would assume its responsibilities.

15. The chairman pointed out that this vote would not make matters any clearer, as the voting rights of the EU Member States would be exercised by the representative of the European Union. He proposed that implementation of the decision of the 47th session of the RID Committee of Experts be deferred another two years, and until then, to prescribe the voluntary use of derailment detectors in RID.

16. The RID Committee of Experts again endorsed the aim of including provisions in RID concerning the detection of derailments, but agreed to defer implementation of the provisions by another two years (see Annex I) and assumed that this time would be used for further investigations. It also decided to include a note dealing with the voluntary use of derailment detectors.

17. There was a lengthy discussion on where this new note should appear. As this note was to apply to all wagons used for the carriage of dangerous goods, not just to tank-wagons, Chapters 4.3 and 6.8, which only apply to tank-wagons, were not suitable. It was finally decided to put the note at the end of 7.1.1 (see Annex I).

Annex I: Texts adopted by the 51st session of the RID Committee of Experts

B. New amendments to enter into force on 1 January 2013

Chapter 7.1

7.1.1 At the end, insert the following Note:

"**NOTE:** Wagons are allowed to be equipped with detection devices which indicate or react to the occurrence of a derailment, provided that the requirements for the authorisation for placing into service of such wagons are met.

The requirements for placing into service of wagons cannot prohibit or impose the use of such detection devices. The circulation of wagons shall not be restricted on the grounds of the presence or lack of such devices."

C. Amendments to enter into force on 1 January 2015

Add the following new transitional measure:

["1.6.3.x Tank-wagons and battery-wagons

– for gases of Class 2 with classification codes containing the letter(s) F, T, TF, TC, TO, TFC or TOC, and

– for substances of classes 3 to 8 carried in the liquid state and to which tank code L10BH, L10CH, L10DH, L15CH, L15DH or L21DH is assigned in column (12) of Table A of Chapter 3.2,

constructed before 1 January 2015 which do not, however, conform to the requirements of 6.8.4 (b) concerning special provision TE xx applicable from 1 January 2015 may continue to be used."**]**

[Chapter 3.2

Table A In **column (13)**, insert "TE xx" in the following cases:

– for tanks for gases of Class 2 with classification codes containing the letter(s) F, T, TF, TC, TO, TFC or TOC, and

– for tanks for substances of classes 3 to 8 with tank code L10BH, L10CH, L10DH, L15CH, L15DH or L21DH.**]**

[6.8.4 (b) Insert the following new special provision TE xx in 6.8.4 (b) (left-hand column only):

"**TE xx**	Tank-wagons for substances carried in the liquid state and gases, and battery-wagons shall be equipped with a detection device that provides an immediate and clear signal to the **[**locomotive driver**]** that a derailment has occurred. This device shall meet the requirements of the relevant technical specifications for interoperability (TSI) and OTIF's uniform technical prescriptions (UTP) (wagons, operation, tunnel safety)."**]**

2013

2nd session of the RID Committee of Experts' standing working group (Copenhagen, 18 – 22 November 2013) (report OTIF/RID/CE/GTP/2013-A)

Documents: informal documents INF.3 (Italy)
INF.15 (Italy)

97. With the aid of his presentation in informal document INF.15, the representative of Italy explained how important it was to establish as quickly as possible that a derailment has occurred. If the train is braked immediately, the derailed wagon would not continue to travel as

far and the wagon would be less likely to overturn, with a subsequent collision with fixed objects on the tracks.

98. Investigations based on 33 derailments in Italy had revealed that the average distance between a derailment and the stopping of the train without emergency braking was 3750 m.

99. He explained that based on analyses, it could be demonstrated that the consequences of the accident in Viareggio would have been much less severe if the wagon involved in the accident had been fitted with derailment detectors. If this had been the case, the wagon would not have overturned.

100. He therefore endorsed recommendation No. 10 made by the Italian accident investigation body in the final report of the railway accident in Viareggio on 29 June 2009, according to which all dangerous goods wagons should be fitted with derailment detectors. In so doing, older wagons should be given precedence (see also report of the working group on tank and vehicle technology OTIF/RID/CE/GT/2012-A, paragraphs 19 to 24). The provisions on the detection of derailments in square brackets in document OTIF/RID/CE/GTP/2013/17 should therefore be brought into force on 1 January 2015.

101. The representative of ERA said that Italy's presentation did not contain any new findings that had not already been taken into account in ERA's report on the short and medium term prevention and reduction of freight train derailments, which also took account, among other things, of the findings of the study carried out by Det Norske Veritas (DNV) and of the task force set up after the Viareggio accident to look at the maintenance of freight wagons (see informal document INF.5 of the 13th session of the RID Committee of Experts' working group on tank and vehicle technology (Rome, 11 and 12 April 2012) and report OTIF/RID/CE/GT/2012-A, paragraphs 5 to 18). As Italy had not submitted any new findings that had not already been taken into account in this study, ERA would not revise its recommendation to the European Commission.

102. The representative of ERA also said that a long term study on reducing derailments commissioned by the European Commission's Directorate-General for Research and Innovation had confirmed ERA's findings, which are: derailment detection is not cost-effective at present and a lot of other measures which significantly reduce the risks in a cost-effective way are available on the market.

103. The representative of the Netherlands pointed out that in railway accidents, there was constant reference to the consequences when dangerous goods were involved. There was an expectation that for the carriage of dangerous goods, further measures should be taken which should not be restricted to the tank.

104. The representative of ERA explained that the conclusion reached by Italy concerning the possibility that the presence of derailment detection would have prevented the wagon overturning was highly questionable, as researchers in train dynamics modelling do not think that it is possible to model train dynamics with a sufficient level of accuracy to draw such conclusions. He also reminded the meeting that after the Viareggio accident, many new safety provisions had been developed at European level for the safety of the railway system (e.g. European Visual Inspection Catalogue (EVIC), European Wheelset Traceability (EWT), ECM regulation) and that these provisions had now been implemented. These measures reduce the risks of accidents in the transport of dangerous goods.

105. The representative of UIC recalled that the job of the RID Committee of Experts was to give an opinion on all aspects of safety in the carriage of dangerous goods, even if certain decisions were taken at another level.

106. Now that the European Commission had declared that it would exercise the right to vote of all the European Union Member States on this issue, the chairman explained that a final de-

cision on the provisions concerning derailment detection could only be taken at the 53rd session of the RID Committee of Experts in May 2014.

107. The representative of Italy was asked to submit more information to the next session of the working group on which object had penetrated the tank (see also report OTIF/RID/CE/GT/2012-A, paragraph 22).

2014

3rd session of the RID Committee of Experts' standing working group (Berne, 20 and 21 May 2014) (report OTIF/RID/CE/GTP/2014-A)

Document: OTIF/RID/CE/GTP/2014/1 (Switzerland)

20. In its document, Switzerland again highlighted the positive cost/benefit ratio of fitting railway vehicles with derailment detectors that had been established in studies carried out by the European Railway Agency (ERA) and proposed that the square brackets around 1.6.3.x, the first amendment to Table A of Chapter 3.2 and 6.8.4 (b) in document [OTIF/RID/NOT/2015] be deleted. Alternatively, or as a subsequent step, Switzerland asked that an overall timetable for the gradual fitting of all freight wagons with derailment detectors over a long-term time frame be established.

20b. ERA said that many of the arguments presented by Switzerland contradicted ERA's information on the current situation. In particular, point 3 of the Swiss proposal incorrectly interpreted the meaning of the provision in RID 7.1.1 in relation to the provisions for placing railway vehicles into service.

21. However, as suggested by the Chairman, to save time ERA did not discuss the other arguments put forward by Switzerland in further detail. This would be done at a later stage. The Chairman pointed out that in a European Union Council decision of 6 May 2014, the European Union States had agreed "to assess further, in the light of technical and scientific progress" the question of derailment detection, and "to continue to work on the identification of a sustainable solution to detect derailments and mitigate their effects, including the future implementation of this solution". Therefore, owing to the balance of power in the RID Committee of Experts, the adoption of Switzerland's first proposal was out of the question.

22. After a lengthy discussion, the standing working group decided to set up an RID Committee of Experts' working group, with a secretariat and interpretation, to discuss all the issues in connection with the introduction of derailment detectors or other related measures.

23. Among other things, the working group should bear in mind the various approaches to safety in general rail transport and in the dangerous goods field. In order to rule out catastrophic incidents in the carriage of dangerous goods, the working group would also have to look at alternative measures (e.g. requirements for the tank) to mitigate the effects of derailments. The representative of Spain also requested that preventive measures to avoid derailment, such as axle temperature measurement or impact detectors, also be included in the scope of this working group.

24. At the first meeting, all the questions that arise in relation to the mechanical derailment detector and in relation to possible alternatives that are already identifiable should be listed. These questions should then be fed in to the final conference organised by the D-Rail consortium to disseminate the results of the D-Rail research project in order to obtain initial responses from there, which could then be discussed at a second meeting of the working group. At a suitable time, the feedback from this RID working group should be provided to the RID Committee of Experts' standing working group and to the European Union's Dangerous Goods Regulatory Committee and RISC Committee.

24a. In reply to a question from Switzerland on the vision for the long term, the representative of ERA explained that in coordination with DG Research & Innovation, the Agency had anticipated long term developments since 2009, and that the D-Rail research project initiated in 2011 would be completed by the end of 2014. The final conference referred to would be open to all interested parties and standing working group participants would be informed of the date as soon as possible.

25. ERA pointed out that the Council decision mandated the European Railway Agency and not the RID Committee of Experts. As required by the Council, ERA would undertake further steps, including the definition of the framework and the work plan. If the RID Committee of Experts decided to set up a working group, ERA would consider the results of this group in the context of its work, together with all interested parties. The Chairman explained that the Council working group had explicitly requested that ERA and the RID Committee of Experts work together on this issue and this had been taken into account in the EU's decision. The RID Committee of Experts was free to organise how it formed its opinion. The representative of the European Commission explained that the aspects of the subject of derailment that were specific to dangerous goods should be at the forefront of the work on RID, whereas the work at ERA had to take the entire rail sector into account.

26. Germany, Italy, the Netherlands and Spain said they would be willing to host one of these working group meetings. The Netherlands offered to take on the management of the working group. At the invitation of Italy, the provisional dates of the first meeting will be 13 to 15 October 2014 in Rome.

27. The Chairman said he hoped that these renewed efforts would lead to a resolution of this issue, which had been the subject of controversial discussions, with the result leading to improved safety for those involved, not least in the event of derailments.