

OTIF



**ORGANISATION INTERGOUVERNEMENTALE POUR
LES TRANSPORTS INTERNATIONAUX FERROVIAIRES**

**ZWISCHENSTAATLICHE ORGANISATION FÜR DEN
INTERNATIONALEN EISENBAHNVERKEHR**

**INTERGOVERNMENTAL ORGANISATION FOR INTER-
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TO THE GOVERNMENTS OF THE MEMBER STATES OF OTIF

**Final report of the RID Committee of Experts working group
on tank and vehicle technology
(Bonn, 21 and 22 April 2005)**

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1. At the invitation of the German Federal Ministry of Transport, Construction and Housing (BMVBW), the 6th meeting of the RID Committee of Experts working group on tank and vehicle technology was held in Bonn on 21 and 22 April 2005.
2. The following States took part in the discussions: Belgium, Germany, France, Lithuania, Netherlands, Poland, Sweden, Switzerland, Czech Republic and United Kingdom. The International Union of Railways (UIC) and the International Union of Private Wagons (UIP) were also represented.

Chairmen

3. As already decided at the first session, Mr. H.-J. Kellerhaus (Germany) chaired the meeting and Mr. A. Bale (United Kingdom) was vice-chairman.

Adoption of the agenda

4. The provisional agenda contained in the invitation (document A 81-03/501.2005) was adopted. Documents INF. NL 1 and INF. NL 2 from the 5th meeting and INF. NL 1 from the 6th meeting were brought forward. With regard to agenda items 3 b), c) and d), the representative of UIC commented that from a technical point of view, these topics should be dealt with in this working group, and also in the working group on standardized risk analysis.

ITEM 2 a): Detecting derailments

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: 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.

ITEM 2 b): Measures to prevent and limit damage caused by the overriding of buffers

Document: INF. F 1

8. In his document, the representative of France proposed a performance specification for devices to protect against the overriding of buffers, which had been prepared with participation from French wagon operators, SNCF and the French Ministry of Transport. The aim of the performance specification was to avoid more major reconstruction work on wagons, not to increase the risk to personnel in the "Bern rectangle", not to change the length of wagons and to prevent other wagons being compromised when taking curves. The value of at least 150 kN established for vertical forces resulted from simulation models.
9. He explained that the diagram shown was not part of the proposal. When two wagons with the same device to protect against the overriding of buffers met, the wagons would in every case be displaced vertically, with the climbing wagon being held back by the bottom wagon's device to protect against overriding. The text proposed would ensure compatibility with devices to protect against the overriding of buffers other than the one depicted, or with wagons without devices to protect against the overriding of buffers.
10. Several delegations pointed out that earlier discussion had also revealed that the necessary compatibility had always been perceived as the main problem. It would therefore have to be ensured that a type approval was carried out beforehand. The working group therefore addressed a request to UIC to prepare performance specifications that could be referred to in paragraph (a) of new special provision TE xx.
11. In the third to last indent, the representative of France explained that the arresting device had to be as wide as the buffer head, but that on the footboard side, it must not be able to encroach upon the area in which a shunter would stand on the footboard.
12. The proposal was put to the vote and adopted by 8 votes to 1, with one abstention.
13. The representative of UIC was not convinced that the measure of protecting against the overriding of buffers was an equivalent measure in comparison with the other measures of new special provision TE xx, and he referred to the accident report contained in document INF. S 1 (see paragraphs 28 and 29). While the representatives of Belgium and France pointed out that it had been established in the RID Committee of Experts that devices to protect against the overriding of buffers were deemed to be equivalent, the representatives of the Netherlands and UIC emphasized that at that time, the specific design of the devices to protect against the overriding of buffers had not been known. In addition, France's proposal for this working group had been submitted very late. **The representative of France explained that the equivalence of measures in the context of a specific scenario would have to be analysed. In the scenario where a train left the track completely, there was also no guarantee of the effectiveness of the protective devices on the tank end, as there was no certainty that the impact would occur at the point where the protective device was fitted.**
14. The representative of France was asked to submit his proposal to the next session of the RID Committee of Experts, although certain terms still needed to be checked in the French version. **In order to take into account the concerns expressed by the representatives of UIC and the Netherlands, the chairman proposed that the RID Committee of Experts should look at the question of equivalence again.**

Document INF. F 2

15. In his document, the representative of France called into question the applicability of the test method in standard EN 13094 Annex B to sandwich covers. He proposed that an additional study be carried out, in which the increase in energy absorption capacity be calculated when the wall thickness is increased from 12 mm to 18 mm for shells made of steel. Because of the

different thicknesses of test samples made of steel and from a sandwich construction, he was of the view that the way the test samples were assembled plays a decisive role, in order to ensure that the energy is absorbed only by the construction and not by the type of assembly.

16. The representative of Germany explained that the diagrams contained in the document originated from a test that had been carried out in connection with reducing the wall thickness on tank-vehicles and tank-containers (see 6.8.2.1.19 et seq.). A spike that was prescribed by IAEA for Type B packages had been used as a projectile. The test had demonstrated that an energy absorption capacity of $22 \text{ kJ} \pm 1 \text{ kJ}$ is achieved by the insulation construction.
17. It was agreed that the representatives of France and Germany would try to find a more suitable test method by the next session of the RID Committee of Experts. Should this turn out not to be possible by then, the present text should be included in RID and the work should be continued at the next meeting of the working group.

Document INF. B 1

18. The representative of Belgium introduced a draft proposal to the Joint Meeting setting out the provisions adopted for tank-wagons concerning devices to protect against the overriding of buffers and the limitation of damage caused by the overriding of buffers, the aim of which was to prescribe equivalent measures for tank-containers.
19. In the subsequent discussion, the following points were mentioned, which should be taken into account in further discussions:
 - Consideration should not be restricted to tank-containers used in European land transport, but must also include UN portable tanks. As Chapter 6.7 already prescribed easier conditions for portable tanks that are not used in rail transport, other railway-specific requirements could be dealt with in the UN Sub-Committee of Experts.
 - The frame structure of a tank-container cannot be changed because of the intermodal nature of this means of transport.
 - **It was only possible to check those protective measures that related to the tank. The measures relating to the wagon could not be implemented because all types of goods can be carried in container wagons.**
 - It may be possible to achieve improved safety by positioning dangerous goods tank-containers in the middle of container wagons, **where possible**. However, owing to the considerable operational implications, these questions would first have to be discussed in depth with UIRR (International Union of Combined Road-Rail Transport Companies) and UIC.
 - The different masses of tank-wagons and tank-containers, the design of tank-containers (frame construction) and the fact that tank-containers can only absorb horizontal forces and cannot absorb vertical forces because of the way they are fixed to the container wagons should also be included in the considerations.
 - It must be checked whether there is a safety benefit in that tank-containers are carried primarily in complete train-loads that require less marshalling. In this context, accidents involving tank-containers and the transport performance of tank-containers must be considered.
20. **The representative of Belgium was asked to get in touch with UIRR to discuss all the problems surrounding this matter and to revise his document, taking into account the comments made above and any new elements.** The other delegations were asked to send the representative of Belgium reports on accidents involving tank-containers.

ITEM 3 a): Telematics

Document: INF. D 1

21. The representative of Germany invited those participating in the working group to an information seminar by the Federal Ministry of Transport, Construction and Housing on the subject of "Improving safety in transport and safeguarding against misuse by means of technical and logistical measures" to be held at the "transport logistic" trade fair in Munich, the programme of which was shown in document INF. D 1.

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 **T**ransportation 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.

Document: TSI "Telematics applications for freight transport"

24. In connection with the TSI "Telematics applications for freight transport", the representative of UIC pointed out that it was vital that a representative of the European Railway Agency (ERA) take part in the work of the RID Committee of Experts, in order to avoid counterproductive wording in the TSIs that also affected the dangerous goods sector (e.g. "RID number = OTIF number for dangerous goods").

ITEM 4 b): Drip leaks

Document: INF. NL 1

25. The representative of the Netherlands introduced his document which, on the one hand, contained a proposal for control requirements for filling and emptying tank-wagons for substances carried in the liquid state, and on the other, a proposal for emptying service equipment after filling or emptying, in order to avoid leaks occurring during carriage. He added that for top discharge tank-wagons, it was not possible to carry out a visual inspection and a small gauge pressure was the best test method. **As it was not possible to establish by means of a visual inspection of tank-wagons with bottom discharge whether the shut-off devices were really closed so as to be leakproof, he was of the view that the leakproofness of all closures should be checked by means of a suitable test (e.g. negative pressure test).**

26. In the subsequent discussion, the following points were addressed:

- This is not a problem that is specific to the railways. However, it was also pointed out that rail transport differs in principle from other transport modes, as firstly, in rail transport several participants are involved and secondly, in road or inland waterway transport, less serious problems can be established and dealt with quickly. **The Joint Meeting had been of the view that as a rule, this problem concerned tank-wagons rather than tank-vehicles and should therefore be dealt with by the working group on tank and vehicle technology.**
- The number of leakages detected should be placed in relation to the transport performance in order to establish whether this really is a serious problem.
- It is not known whether the leakages detected are the result of the closures being in a bad condition or whether the closures are wrongly operated. If the problems are primarily technical, these could certainly be dealt with in RID. However, problems resulting from carelessness on the part of personnel would have to be resolved in some other way.
- It must be checked whether the bottom valve can open as a result of the vertical accelerations that can occur in rail transport. This would be a problem that could not be ascertained when filling.
- 1.4.3.3 already contains obligations for the filler that do not necessarily have to be repeated in Chapter 4.3.
- The proposal does not cover the safety of the personnel who must carry out the tests.
- It is not clear why a negative pressure test has to be carried out on tanks with bottom-discharge.
- In a pressure test, the question arises as to what must be done with the gas after the pressure is released.
- The question arises as to whether it is really necessary to undertake a pressure test every time the tank-wagon is filled or emptied.
- It is not possible to empty the service equipment if non-return valves are fitted. Also, it is not clear what has to be done with the products removed.

27. The representative of the Netherlands said he was prepared to revise his document on the basis of the comments made and following consultation with Railtech.

ITEM 4 e): Reports on incidents in the carriage of dangerous goods in accordance with RID 1.8.5

Document: INF. S 1

28. The representative of Sweden introduced his report of an accident in which a complete train-load carrying 770 tonnes of chlorine in 12 tank-wagons hit a set of buffers at a speed of 45 km/h and partially derailed. He added that the fact that no **release of dangerous goods occurred** was **particularly supported by** the presence of crash buffers and protective shields.

29. Mr Runkel of VTG, the company operating the chlorine tank-wagons involved in the accident, explained that when VTG had developed the wagons in 2001 and 2002, the working group's recommendations had been followed and safety components such as protective shields and crash buffers had been used. These already satisfied the requirements adopted at the last session of the RID Committee of Experts. In this accident, buffers were overridden at two points. The function of the protective shield as a crumple zone and strengthening of the tank wall had been impressively proved. Conclusions concerning the dimensions of the protective shield might be drawn from this accident. At the impact speed of around 45 km/h, the crash-buffers, which were originally designed for 35 km/h, in conjunction with the sub-frame, clearly proved their value. Their energy absorption capacity was fully used, but the sub-frame was only marginally deformed. In the case of two wagons, the increased distance between the end of the tank and the headstock prevented the climbing buffers from reaching the protective shield and hence the tank.

Document: INF. NL 1 (5th meeting)

30. The representative of the Netherlands introduced his report that had been submitted to the last meeting of the working group on an incident involving UN 1093 acrylonitrile in Amersfoort. One main focus of the report on the technical causes was the maintenance of tank-wagons. He added that the problem lay in the allocation of responsibilities. He called for a safety culture that went beyond the responsibilities themselves.
31. The chairman was of the view that from the technical point of view, there was no call for action, as double safety was already prescribed. The cause of the incident was human error when controlling the material.
32. The representative of Germany reminded the meeting that there would have to be detailed allocation of obligations in each individual State in order to penalise those who **should** have intervened directly. In his view, it was not enough to carry out checks during carriage. Checks to ensure that obligations were being met had to be carried out at the place of departure and destination. He called for solutions to be sought not just in updating the requirements but also in improving checking practice.
33. The working group agreed unanimously that in order to carry out checks, sufficient financial resources also had to be provided.

ITEM 4 f): Election of the future chairman of the working group

34. Contrary to the statement he made at the last meeting, the present chairman said that he was prepared to continue to make himself available to the working group. He was re-elected unanimously.

Next meeting

35. Agenda items 3 b), 3 c), 3 d), 4 a), 4 c) and 4 d), which were not dealt with at this meeting, were postponed to the next meeting in April 2006. The representative of Belgium withdrew his document INF. B 3, submitted to the 5th meeting, which contained a report on the derailment of a covered wagon, as this accident would not be of any interest to the working group.

Annex 1

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