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**ECONOMIC COMMISSION FOR EUROPE**

INLAND TRANSPORT COMMITTEE

Working Party on the Transport of  
Dangerous Goods

(Sixty-fifth session,  
Geneva, 16-20 November 1998,  
agenda item 5 (a))

PROPOSALS FOR AMENDMENTS TO ANNEXES A AND B OF ADR

Report of the informal working group  
on the construction of tank-vehicles  
(Paris, 11-13 February 1998)

Transmitted by the Government of France

1. At its November 1997 session, the Working Party considered that proposals concerning tank-vehicles should be re-examined by an informal working group. This working group met in Paris from 11 to 13 February 1998. Representatives of the following countries participated in its work: Finland; France; Germany; Italy; Netherlands; Norway, Poland; Portugal; Slovak Republic; Spain; United Kingdom; Sweden. Representatives of the European Commission, the Liaison Committee of Coachwork and Trailer Builders (CLCCR) and the International Road Transport Union (IRU) also took part.

2. The agenda of the meeting included the following documents:

TRANS/WP.15/R.405 (Italy) Marginal 211 127 (5) (b) 4

TRANS/WP.15/R.433 (Germany) Marginal 21x 127 (3) and (4)

TRANS/WP.15/1997/3 (Spain) Use of aluminium - marginal 211 125

Informal documents distributed at the WP.15 November 1997 meeting:

INF.17 (EPTA) Comments on document -/1997/3

INF.18 (EPTA) Comments on document R.433

INF.19 (Germany) Report of the Aschaffenburg working group

INF.21 (Germany) Marginal 10 220 (1)

New proposals:

INF (Norway) Comments on documents -/R.433 and -/1997/3

INF (Italy) Safety of the fittings and accessories mounted on the upper part of the shell

Rear protection of tanks - marginal 10 220 (1)

3. The representative of Germany introduced document INF.21 which replaced document -/R.430 following the discussions of the Aschaffenburg working group (see INF.19). Rather than defining design requirements, the proposal was aimed at providing performance criteria for the protection of tanks in rear-end collisions; the European Committee for Standardization could then prepare a standard incorporating these criteria.

4. A lengthy discussion took place on the subject of this proposal. The timeliness of introducing a value for the energy absorption capacity for any protection measure was considered in the light of the amended directive 70/221/EC which defined tests for the rear protection of vehicles. It was recalled that the current marginal 10 220 (1) was differently interpreted and that for the most part it was considered that the required bumper could be the one with which the vehicle was normally equipped.

5. The principle of establishing general requirements without defining means conditions was favourably received by some delegates. However, a cost-benefit analysis seemed necessary in order to be able to take a decision on the question.

6. Recalling that accident data showed a large number of accidents due to rear collisions in his country, the representative of Germany stressed the need to take preventive measures. He considered better tank-protection indispensable in order to avoid any leakage from the vehicle following a rear collision.

7. Most delegates shared this concern but were unwilling to adopt requirements of this nature in the absence of criteria for assessment and in the light of their own countries' experience of accidents.

The working group was in favour of continuing reflection in this regard and proposed that the results of the THESEUS research project should be used to initiate a European project.

The representative of Germany announced that he would revise his proposal.

Tanks with a polycentric cross-section - marginal 211 127 (5) (b) 4

8. The representative of Italy introduced document -/R.405 which proposed that requirements for protection against damage similar to those applicable to circular or elliptical tanks should be introduced for tanks with a polycentric cross-section.

9. Some delegates considered that the provisions proposed were not adequate and expressed their concern, particularly with regard to how such tanks stood up to overturning. Feedback from countries where such tanks were used to carry hydrocarbons, showed that they behaved like elliptical tanks in the event of an accident.

It was recalled that this technical solution had already been adopted in the draft standard prepared by CEN/TC296/WG2.

10. The working group considered that this question could be dealt with in the context of a proposal that Germany was intending to submit on tank shapes.

Equivalence formula for shell thickness - marginals 21x 127 (3) and (4)

11. The representative of Germany pointed out that the proposal contained in -/R.433 came into the context of the report on the THESEUS research project. One of the report's conclusions concerned the equivalence formula to determine the minimum thickness for the walls of a shell made of a metal other than the reference metal (mild steel).

Tests on shells constructed in materials of different kinds, the thicknesses of which were determined by the existing equivalence formula, gave very variable results of failure behaviour. Germany therefore proposed to replace the existing formula by a new one which would enable tanks to be designed with an equivalent level of safety.

12. A lengthy discussion took place during which the representative of the company PECHINEY specified that the determination of the equivalent thickness should take account of static features, fatigue and also the energy absorption capacity of the material.

13. With reference to the use of aluminium, the intention of Spain in document -/1997/3 was to encourage the use of more effective alloys and to establish minimum values for the thickness.

14. It was proposed that endeavours should continue to conciliate the views of the various experts in order to define a new equivalence formula, taking into account Germany's proposal which was based more on mechanical tests, but also considerations of folding and buckling.

15. The ideal would be to find a new formula which would give the advantage to materials with mechanical features guaranteeing good performance and be less advantageous for poorer materials.

16. In the time required to achieve this objective, the working group proposed the introduction into ADR of the following minimum values for shell walls:

Diameter (m)	Minimum thickness of steel (mm)	Minimum thickness of aluminium (mm)
$\leq 1.80$	2.5	4
$> 1.80$	3	5

Safety of the fittings and accessories mounted on the upper part of the shell

17. The representative of Italy introduced a document distributed during the meeting on improving the safety of unpressurized tanks intended for the carriage of substances of Class 3. He considered that in the event of overturning, all the accessories mounted on the upper part of the shell should be leakproof.

18. Several delegates shared this concern and observed that the fittings mounted on the upper part of oil tanks were very vulnerable in the event of overturning. However, rather than include too many technical details in ADR, they considered that they should appear in the standards.

19. The general safety requirements were given in marginal 211 130 of ADR and the representative of Italy would make proposals to the standardization bodies on that basis.

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