Economic Commission for Europe

Inland Transport Committee

Working Party on the Transport of Dangerous Goods **23 July 2014**

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Item 5 (a) of the provisional agenda
Proposals for amendments to RID/ADR/ADN: pending issues

Sample Testing for Partial Subsitution of Periodic Inspection of Individual Cylinders

Transmitted by the Government of Germany

Introduction

1. This Informal paper reflects the proposals as presented in ECE/TRANS/WP.15/AC.1/2014/48 by AEGPL and is related to document ECE/TRANS/WP.15/AC.1/2014/31 and other papers referenced in ECE/TRANS/WP.15/AC.1/2014/48. These proposals describe a procedure to be used specifically for small cylinders approved for LPG transport. These cylinders are permanently over-moulded, which makes external inspection of the load carrying steel cylinder after manufacturing or periodic inspection impossible. The external visual inspection is one of the current mandatory checks to be performed on each individual pressure receptacle during periodic inspection and as pre-fill inspection.

2. Reflecting this inherent limitation in the periodic inspection of over-moulded cylinders, AEGPL has developed a substitution procedure that determines the status of the population by way of (destructive) sample testing. The essential points of the approach presented in the proposals are the combination of a substitution procedure and a sufficient number of pressure receptacles per tested sample – especially where destructive tests are performed.

3. The approach proposed by AEGPL might be of interest in other cases where visual or efficient NDT methods are unavailable. In the following, essential requirements for such a procedure are presented. This is intended to provide guidance and create confidence in such procedures that are based on sample testing and are to substitute current mandatory checks.

4. It is intended to request an agreement on new paragraphs for 6.2.3.5 in accordance with the proposed essential requirements in each case where mandatory checks are to be substituted by the described approach. It is not intended to create a lack of harmonisaiton by leaving relevant decisions to the discretion of competent authorities.

Proposal 1

5. Add a new paragraph 6.2.3.5.2 to read as follows:

6.2.3.5.2 General provisions for the substitution of required periodic inspection methods

(a) If the inherent properties of a design type prevent the successful performance of one or more of the items of inspection or checks required in 6.2.1.6.1 (a) to (e) for periodic inspection or the successful evaluation of its test results, it shall be permitted to apply a non-destructive testing method in accordance with the relevant notes in 6.2.1.6.1.

(b) If none of the available methods of non-destructive testing is an appropriate alternative for the mandatory check of each pressure receptacle, a testing method shall be defined for each individual design type. This method shall be suitable for monitoring the degradation of groups of pressure receptacles of this design type by destructive testing of samples of each group. Each group of pressure receptacles shall be defined clearly and shall not exceed the annual production of a design type. Each pressure receptacle of such a group shall be marked (e. g. by an electronic identification tag) in such a way that it can be easily traced back to its respective group prior to each pre-fill inspection and periodic inspection.

(c) The testing method shall be defined by the destructive tests to be performed, the sample size, the statistical assessment of the results, the criteria to be met and the frequency of the tests. In the case of the evaluation of residual burst or fatigue strength properties, the confidence level of a sample shall be defined considering the potential consequences of a receptacle failure. The test shall be performed on an adequately sized sample of receptacles and the periodicity of the tests shall ensure that a loss of properties of the receptacle is detected before it becomes critical.

(d) If the monitoring of degradation shows insufficient properties, the group is considered to have failed the periodic inspection and shall be taken out of service. The competent authority that issued the original type approval may permit the further use of parts of the relevant groups (sub-groups) if the cause of the periodic inspection failure has been unequivocally established and does not affect the other parts of the group (sub-groups).

Proposal 2

6. Insert the proposed new paragraphs of 6.2.3.5 as presented in ECE/TRANS/WP.15/AC.1/2014/48 under 6.2.3.5.3 instead of 6.2.3.5.2.