

ECE R 110 ECE/TRANS/WP.29/2013/101	<b>Comments</b>	Date: 2013-Sep-04
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Name, First Name	Company	Adress	E-Mail
Ortenburger, Judith	TÜV SÜD Industrie Service GmbH	Westendstr. 199, 80686 München	judith.ortenburger@tuev-sued.de

(1)	2	(3)	4	5	(6)	(7)
	Part, Annex	§, No.,	Type of comment g,t,e*	Comment, Justification	Proposal	Decision, Comments of Working Group
	Part I, 8.12 (LNG Provisions)	8.12.2 Provisions on LNG tanks	t	<p><b>1. Requirements and tests for safety system against overfilling:</b></p> <p>A system shall be provided for preventing the fuel tank from beien overfilled.</p> <p>But there are neither requirements for safety and function of this equipment nor performance tests!</p>	<p>Technical Requirements and Performance tests have to be included in Annex 3B for LNG tanks as follows:</p> <p>Requirements:</p> <p><b>8.12.2</b></p> <p>A system shall be provided for preventing the container from being overfilled. <b>This system may work in conjunction with the refuelling station.</b> This system shall bear a permanent marking, indicating the container-type for which it has been designed and if applicable the mounting position and orientation.</p> <p>The filling process shall not lead to any pressure relief device coming into operation irrespective of time passed during/after the filling process. The filling process shall not lead to operating conditions the boil off venting system is not designed for and therefore cannot handle.</p> <p>Annex 3 B, 4.15.3 new</p> <p>The maximum filling level test shall be conducted in accordance with paragraph A5? and meet the requirements therein.</p> <p>A5? <i>Maximum filling level test</i><sup>6</sup>.</p>	<p>Already in the current R110 version:</p> <p>8.12.2. A system shall be provided for preventing the fuel tank from being overfilled.</p> <p>The in yellow marked part (in line with ISO requirements) is on request of France removed from the original version.</p> <p>We can suggest ISO 12991:</p> <p>A system shall be provided for preventing the container from being overfilled. <b>This system may work in conjunction with the refuelling station</b></p> <p>The filling process shall not cause any pressure relief valve to operate during the filling process. The filling process shall not lead to operating conditions that the boil-off management system is not designed for, and therefore cannot handle.</p> <p>Under all circumstances and regardless of the fuel</p>

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					<p>1. Criteria During all the tests necessary for approval, the filling process shall not lead to any pressure relief device coming into operation irrespective of time passed during/after the filling process. The filling process shall not lead to operating conditions the boil off venting system is not designed for and therefore cannot handle.</p> <p>2. Procedure The tested tank shall be representative of the design and the manufacturing of the type to be approved. Its manufacturing shall be completely finished and it shall be fitted with all its equipment and particularly the level gauge. The tank shall already be cooled down and the inner tank shall be at the same temperature as the liquid hydrogen. The tank shall have contained during the previous 24 hours a volume of liquid hydrogen at least equal to half of the water volume of the inner tank</p> <p>The mass of hydrogen or the mass flow rate at the inlet and the outlet of the tank shall be measured with an accuracy better than 1 per cent of the maximum filling mass of the tested container</p> <p>The tank shall be completely filled 10 times with liquid hydrogen at equilibrium with its vapour. Between each filling at least a quarter of the liquid hydrogen of the tank shall be emptied</p> <p>3. Results The test conditions and the ten maximum level</p>	condition and the maximum operating pressure of the inner tank, the filling volume of LNG shall not exceed the maximum filling level of the inner tank specified by the fuel tank manufacturer.

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					measured by the added system shall be written in a test certificate signed by the manufacturer and the technical service.	
	Part I, 8.12 (Provisions on LNG-tanks)	8.13.1 obligatory equipment of LNG tank	t	<b>2. Main automatic shut off valve</b>  There is no automatic valve on the LNG tank required. Most of the given safety measures, e.g. gas detection, temperature out of limits, pressure out of limits, overfilling can be handled without an activation of an automatic shut off valve on the tank	8.13.1.4 new: automatic shut off valve. The automatic shut off valve may be installed downstream but next to the vaporizer if the vaporizer is connected to the tank by welded or soldered or equivalent joints and if it is tested as part of the tank.	Already covered by new accepted proposal. See October meeting.
	Part I, 8.14 (Provisions on LNG components)	8.14	t	<b>3. Safety system against failure of vaporizer</b>  In the definitions 4.11 is stated: „Other parts downstream from the vaporizer shall be considered as CNG components.“ But there is no safety equipment that prevents the vaporizer from flooding by LNG which could lead to cold temperatures lower than -40°C downstream of the vaporiser and destruction of the CNG-components not designed for cold temperatures lower than -40°C.	8.14.1 new A safety system shall be provided to prevent failure of the heat exchanger; and prevent any cryogenic liquid or gas from entering the other circuit and the system located downstream of it, if it has not been designed for this. 8.14.2 new The components shown shall be type approved pursuant to the provisions laid down in the annexes which can be determined from the table below: ... see 8.14-8.22 old	8.14.1 A safety system shall be provided to prevent any liquid or gas at cryogenic temperature from entering the system components located downstream from the vaporizer or heat exchanger, if they have not been approved for cryogenic temperature (class 5).

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	Annex 3 B	4.15 Tank design qualification tests	t	<p><b>4. Requirements and tests for safety system against failure of vaporizer:</b></p> <p>For the protection device against flooding the vaporizer must be defined requirements and performance tests:</p>	<p>Annex 3 B, 4.15.4 new</p> <p>The performance test of the safety system to prevent failure of the heat exchanger (flooding) shall be conducted in accordance with paragraph A6? and meet the requirements therein.</p> <p>A6? Performance test of vaporiser safety system</p> <p>1. Criteria</p> <p>The safety system shall prevent any cryogenic liquid or gas from entering the other circuit and the system located downstream of it. The temperature downstream of the vaporiser or in the other circuit shall be limited to minimum of -40°C.</p> <p>2. Procedure</p> <p>An operational test of the safety system shall be performed. The test shall be conducted 3 times and show that the main shut off valve is closed if the temperature downstream of the vaporiser or in the other circuit reaches less than -40°C.</p>	See previous point
	Annex 3B LNG-tanks	3.4.1 Inspection and testing	e	<p><b>5. wrong references???</b></p> <p>„3.4.1 Evaluation of conformity is required to be performed in accordance with the provisions of <b>paragraph 9.</b> of this Regulation; In order to ensure that the tanks are in compliance with this Regulation, they</p>	<p>paragraph 9 of the regulation is: „<b>Modifications of a type of CNG and/or LNG component and extension of approval</b>“ Does not fit to the requirement of 3B, 3.4.1 <b>paragraph 6.10 of the regulation</b> does not exist.</p>	Already taken care of see document October meeting GRSG.

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				shall be subject to inspection in accordance with <b>paragraph 6.10.</b> performed by the Competent Authority.“	??? references seem to be wrong – which reference was intended???	

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