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Inland Transport Committee

Working Party on the Transport of Dangerous Goods

Joint Meeting of Experts on the Regulations annexed to the European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways (ADN) (ADN Safety Committee)

Fifteenth session

Geneva, 24–28 August 2009

Item 5 of the provisional agenda

Catalogue of questions

Gas – Practice, objectives 6, 7, 8, 9, 10

Transmitted by the Central Commission for the Navigation of the Rhine (CCNR)¹

1. At its fourteenth session, the ADN Safety Committee, recalling that, under 8.2.2.7.2.3 of the Regulations annexed to ADN, the ADN Administrative Committee was required to prepare a catalogue of questions for the ADN examinations, decided that the item should be put on the agenda for future sessions, in order to enable lists of questions to be translated and adopted progressively (ECE/TRANS/WP.15/AC.2/30, paras. 38 and 40).

2. This document contains the lists of questions proposed by CCNR in respect of dry cargo vessels and the following objectives:

- Examination objective 6: Monitoring of closed spaces and entry to these spaces
- Examination objective 7: Certificates for degassing and permitted work
- Examination objective 8: Degree of filling and over-filling
- Examination objective 9: Safety installations
- Examination objective 10: Pumps and compressors

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Practice

Examination objective 6: Monitoring of closed spaces and entry to these spaces

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
GP 6001		B
	Before entering a hold space gas concentrations must be measured. How are the measurements taken?	
	A A person enters the hold space and takes measurements at all possible locations	
	B Measurements are taken with a flexible tube from top to bottom at various heights	
	C A measurement is taken with a flexible tube just below the hatch	
	D A measurement is taken with a flexible tube at half the height of the hold space	
GP 6002		A
	A vessel is loaded with UN No. 1978 PROPANE. After careful measurement it is ascertained that a hold space contains enough oxygen and less than 5% of the lower explosive limit of propane. Which of the following statements is correct?	
	A The hold space may be entered by a person without protection	
	B The hold space may be entered only if the person in question is wearing a protective suit	
	C The hold space may be entered by a person without protection only if a certificate for degassing has been issued	
	D The hold space may not be entered	
GP 6003	Deleted	
GP 6004		C
	A combined flammable gas detector/oxygen meter produces the following reading after measuring the atmosphere in an enclosed space: 16% oxygen by volume and 9% of the lower explosive limit. Which of the following statements is correct?	
	A The space is safe neither for people nor against the risk of explosion	
	B The space is safe for people but not against the risk of explosion	
	C The space is safe against the risk of explosion but not safe for people	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	D The space is safe against the risk of explosion and also safe for people	
GP 6005	<p>A combined flammable gas detector/oxygen meter produces the following reading after measuring the atmosphere in an enclosed space: 16% oxygen by volume and 60% of the lower explosive limit. Which of the following statements is correct?</p> <p>A The space is safe neither for people nor against the risk of explosion</p> <p>B The space is safe for people but not against the risk of explosion</p> <p>C The space is safe against the risk of explosion but not safe for people</p> <p>D The space is safe against the risk of explosion and also safe for people</p>	A
GP 6006	<p>7.2.3.1.6</p> <p>A vessel is carrying UN No. 1010 BUTADIENE-1-3, STABILIZED. After measurement of the atmosphere in a hold space, it is ascertained that it contains 20% oxygen by volume and 100 ppm butadiene. A person who enters the hold space must wear a protective suit and a self-contained breathing apparatus. What additional measures must be taken?</p> <p>A You have to give the person in question a portable radiotelephone and post a person by the access hatch</p> <p>B At the access hatch you post a person who is in direct contact with the master in the wheelhouse</p> <p>C You secure the person with a line and post a person at the access hatch to ensure supervision, who can communicate with the master in the wheelhouse</p> <p>D You secure the person with a line and post a person to supervise entry; that person must have the same safety equipment at the access hatch, and you must ensure that two other persons are within calling distance of that person</p>	D
GP 6007	<p>A vessel is carrying UN No. 1010 BUTADIENE-1-3, STABILIZED. A hold space is inspected, with the following result: the oxygen meter reads 21% volume, the flammable gas detector indicates 10% of the lower explosive limit and the toximeter reads 10 ppm of butadiene. What conclusions can be drawn from these measurements?</p> <p>A The space is safe against explosions and safe for people</p>	D

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	<p>B The space is safe for people</p> <p>C The space is safe against explosions</p> <p>D The measurements do not make sense</p>	
GP 6008	<p>7.2.3.1.6</p> <p>A vessel is carrying UN No. 1033 DIMETHYL ETHER. Measurement of the atmosphere in a hold space shows that it contains 20% oxygen by volume and 500 ppm of dimethyl ether. A person must enter this hold space. The person is equipped with a protective suit, a self-contained breathing apparatus and emergency equipment. There is already a person supervising near the access hatch. What additional measures must be taken?</p> <p>A You give the person entering the hold space and the one on deck portable radiotelephones so that they can communicate with two other people on deck</p> <p>B You make sure that there are two people within calling distance of the person near the access hatch</p> <p>C You make the same safety equipment available to the person at the access hatch and you make sure that there are two people within calling distance of that person</p> <p>D None</p>	C
GP 6009	<p>What action must be carried out before entering a hold space?</p> <p>A Put on a self-contained breathing apparatus</p> <p>B It is enough to measure the concentration of gas in the hold space</p> <p>C Measure the oxygen and gas concentrations in the hold space</p> <p>D It is enough to measure the concentration of oxygen in the hold space</p>	C

Practice

Examination objective 7: Certificates for degassing and permitted work

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
GP 7001		B
	<p>Measurements indicate that a hold space is free of gas and the oxygen concentration is sufficient. What activities may be carried out in this hold space?</p> <p>A Only visual checks may be carried out</p> <p>B Visual checks may be carried out, and light maintenance work not requiring a flame and not producing sparks may be done</p> <p>C The hold space may be cleaned and the rust scraped away</p> <p>D A hole in a wall may be welded closed</p>	
GP 7002		B
	<p>Measurements indicate that a hold space is free of gas and the oxygen concentration is sufficient. What activities may be carried out in this hold space?</p> <p>A Only visual checks may be carried out</p> <p>B The hold space may be cleaned</p> <p>C The hold space may be cleaned and the rust scraped away</p> <p>D A hole in a wall may be welded closed</p>	
GP 7003	8.3.5	C
	<p>Your vessel is loaded with UN No. 1978 PROPANE. You have to weld a reinforcing support onto the radar mast. Is this permitted during navigation?</p> <p>A Yes, as this is a minor task carried out away from the cargo area</p> <p>B Yes, provided during the welding the gas concentration is regularly measured on site</p> <p>C No, unless this is done with the agreement of the competent authority</p> <p>D No, it is only allowed at a shipyard</p>	
GP 7004	8.3.5	A
	<p>Your vessel is loaded with UN No. 1011 BUTANE. During navigation you would like to carry out some minor repairs in the engine room, and they are likely to produce sparks. Is this allowed?</p> <p>A Yes, provided you do not weld the fuel tank, and</p>	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	provided doors and other openings are closed	
	B Yes, you may weld anywhere	
	C No, a degassing certificate is required	
	D No, it is only allowed at a shipyard	
GP 7005	8.3.5 You rinse your cargo tanks with nitrogen and evacuate the gases (last cargo: UN No. 1978 PROPANE). During the rinsing you would like to carry out some minor repairs in the engine room, and they are likely to produce sparks. Is this allowed?	D
	A Yes, provided you receive authorization from the person responsible for trans-shipment at the shore installation	
	B Yes, provided you close doors and other openings	
	C No, authorization from a classification society is required	
	D No, it is not allowed during loading, unloading and degassing	
GP 7006	8.3.5 Your vessel is loaded with UN No. 1978 PROPANE. You have to weld a new fire extinguisher pipe on the deck. Is this allowed?	A
	A No	
	B No, for this a degassing certificate is required	
	C Yes, as you are not welding the piping containing the product	
	D Yes, provided the gas concentrations are regularly measured	
GP 7007	Your vessel is loaded with UN No. 1969 ISOBUTANE. Is a person allowed to enter the hold space without any protective equipment to carry out a check?	A
	A Yes, this is allowed during loading once it is ascertained that the hold space is free of gas and there is no lack of oxygen	
	B No, only with the agreement of the competent authority	
	C No, only with the agreement of the person responsible for trans-shipment at the shore installation	
	D No, only with a certificate of degassing	
GP 7008	Your vessel is moored at a shore installation and is ready to load	A

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	<p>a product. You want to carry out minor repairs in the accommodation, and they are liable to produce sparks. Is this allowed?</p> <p>A No</p> <p>B Yes, provided the accommodation doors and other openings are closed</p> <p>C Yes, provided during the work the gas concentration is regularly measured on site</p> <p>D Yes, provided you have the agreement of the shore facility</p>	
GP 7009	<p>Your vessel is loaded with UN No. 1011 BUTANE. During navigation you would like to carry out minor repairs in the engine room, and they are likely to produce sparks. Is this allowed?</p> <p>A Yes, as it is minor work outside the cargo area. Such work can be carried out without any other measures</p> <p>B Yes, provided during the work the gas concentration is regularly measured on site</p> <p>C Yes, provided the engine room doors and other openings are closed</p> <p>D No, it is not allowed without the agreement of the competent authority</p>	C
GP 7010	<p>Your vessel is being loaded with UN No. 1280 PROPYLENE OXIDE and you have to carry out minor welding work in the accommodation. Is this allowed?</p> <p>A Yes, as it is minor work outside of the cargo area</p> <p>B Yes, provided during the welding work the gas concentration is regularly measured on site</p> <p>C Yes, with the agreement of the shore installation</p> <p>D No</p>	D

Practice

Examination objective 8: Degree of filling and over-filling

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
GP 8001	1.2.1	C
	A substance's permissible maximum degree of filling for a substance as set out in ADN relates to a given reference temperature. What is this temperature?	
	A 15° C	
	B 20° C	
	C The temperature during loading	
	D The highest temperature likely to be encountered during transport	
GP 8002		D
	You load in cargo tanks 1, 3 and 6 propane from shore tank A, and in cargo tanks 2, 4 and 5 propane from shore tank B. The temperatures in the cargo tanks are not the same. What is the maximum degree of filling that you must observe?	
	A A single degree of filling for all the cargo tanks, corresponding to the average temperature of the propane	
	B A single degree of filling for all the cargo tanks, corresponding to the lowest temperature of the propane	
	C A single degree of filling for all the cargo tanks, corresponding to the highest temperature of the propane	
	D 91% for each cargo tank	
GP 8003		C
	Why should a certain degree of filling of a cargo tank not be exceeded?	
	A Because the vessel would be overloaded	
	B To avoid "waves" in the cargo tanks and thus avoid damaging the tanks	
	C To prevent the liquid from reaching the safety valve if it heats up	
	D To ensure the stability of the vessel	
GP 8004		A
	UN No. 1978 PROPANE is loaded at a temperature over 15° C. You can load up to what filling level?	
	A 91%	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	B More than 91%	
	C Less than 91%	
	D 95%	
GP 8005		B
	What correction has to be applied to determine the permissible degree of filling?	
	A Content correction	
	B Trim correction	
	C Pressure correction	
	D Vapour pressure correction	
GP 8006		A
	What correction has to be applied to determine the permissible degree of filling?	
	A Density correction	
	B Content correction	
	C Pressure correction	
	D Vapour pressure correction	
GP 8007		C
	What risk is there in the event of overfilling?	
	A That the vessel's load is not balanced	
	B That the vessel is overloaded	
	C That the cargo may leak	
	D That there may be a backflow into the cargo tank	
GP 8008	9.3.1.21.1	D
	According to ADN, what degree of filling should actuate the automatic high-level sensor against overfilling?	
	A 86% maximum	
	B 91% maximum	
	C 95% maximum	
	D 97.5% maximum	
GP 8009	9.3.1.21.1	A
	According to ADN, what degree of filling should actuate the level alarm device?	
	A 86%	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	B 91%	
	C 95%	
	D 97.5%	
GP 8010		B
	What should you do when the level device is activated?	
	A Immediately stop the loading	
	B If necessary, reduce the flow of loading	
	C Activate the quick-action stop valve	
	D Transfer some of the product into another cargo tank	

Practice

Examination objective 9: Safety installations

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
GP 9001		A
	What is the function of a safety device against bursts in the piping?	
	A Prevent leaks of large quantities of product in the event of a burst in the piping	
	B Limit the load flow	
	C Prevent depression in the cargo tanks	
	D Prevent excessive pressure build-up	
GP 9002		C
	Where are safety devices against bursts in the piping placed?	
	A In the piping under pressure, near the pump	
	B In the suction pipes, near the pump	
	C In the cargo tank, in the pipes for loading and unloading	
	D On the deck, in the loading and unloading piping	
GP 9003		D
	What is a device against bursts in the piping?	
	A A remote-controlled valve that can be closed if needed	
	B A valve with a hand-operated control that can be closed in an emergency	
	C A narrow section in the line to limit the flow	
	D A self-closing stop-valve requiring no command	
GP 9004		B
	When must a device against bursts in the piping be activated?	
	A When the flow speed is lower than the calculated speed	
	B When the flow speed is greater than the calculated speed	
	C When a rapid blocking valve has been installed before the device against bursts in the piping	
	D When a narrow section has been installed before the device against bursts in the piping	
GP 9005		A
	The device against bursts in the piping is a spring valve set into the piping. When must the valve close on its own?	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	<p>A When the flow speed is so high that the depression over the valve exceeds the tensile force of the spring</p> <p>B When the flow speed is so high that the depression over the valve is less than the tensile force of the spring</p> <p>C When the flow speed is so high that the depression before the valve exceeds the depression corresponding to the tensile force of the spring</p> <p>D When the flow speed is so high that the overpressurization behind the valve exceeds the depression corresponding to the tensile force of the spring</p>	
GP 9006	<p>During loading and unloading the quick-action stop valves must be able to be closed by a switch so that, in an emergency, the loading or unloading can be stopped. Where must these switches be located?</p> <p>A At two locations on the vessel (fore and aft) and at two locations on shore</p> <p>B At the shore installation and at the shore connection of the pipes for loading and unloading</p> <p>C In the wheelhouse, at the shore connection of the pipes for loading and unloading and at the shore installation</p> <p>D At two locations on shore (directly at the access to the vessel and at a sufficient distance) and in the wheelhouse</p>	A
GP 9007	<p>What is the function of rapid closing devices?</p> <p>A Automatic closure of valves in the connecting pipes between the shore installation and the vessel during gas release</p> <p>B Possibility of closing the quick-action stop valves located in the connecting pipes between the shore installation and the vessel</p> <p>C Automatic stopping of the unloading pumps if there is a gas release</p> <p>D Possibility of quickly shutting off unloading pumps if there is a gas release</p>	B
GP 9008	<p>A vessel is connected by a loading facility with liquid and gas lines of a shore facility. A switch for the rapid closing devices is activated, thus stopping the loading. What happens after that?</p> <p>A Only the unloading pumps and the compressors are shut</p>	C

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	off	
	B Only the shore facility's rapid blocking valve is closed	
	C The quick-action stop valves are closed and the unloading pumps and compressors are shut off	
	D The quick-action stop valves are closed and the loading installation is uncoupled from the breakage link	
GP 9009		D
	Which of the following equipment is not among the rapid closing devices?	
	A Breakage cable	
	B Safety system against overflowing	
	C Quick-action stop valves in the loading installation	
	D Breakage link in the loading installation	
GP 9010		A
	In which case will the rapid closing safety system linked to the shore facility not work?	
	A When the level gauge is activated	
	B When the safety system against overflowing is activated	
	C When a switch of the rapid closing system is activated	
	D When the boat is adrift	

Practice

Examination objective 10: Pumps and compressors

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
GP 10001		C
	In which of the following cases is the residual cargo smallest?	
	A During unloading with an evaporator installed on shore	
	B During unloading with a compressor installed on shore	
	C During unloading, with pressurized nitrogen from shore	
	D During unloading with a submerged pump of the vessel	
GP 10002		D
	A vessel is equipped with two compressors and two deck pumps. Can propane be unloaded using the compressors only?	
	A No	
	B No, at least one pump is required	
	C Yes, always	
	D Yes, if the back pressure is not too great	
GP 10003		A
	A vessel is equipped with two compressors and two deck pumps. Can propane be unloaded using only deck pumps?	
	A No	
	B Yes, always	
	C Yes, but it will take longer	
	D Yes, if the gas return flow in the shore tank is ensured	
GP 10004		B
	What safety mechanism is there on the deck pumps?	
	A A minimum filling level switch	
	B A motor temperature safety device	
	C A low pressure switch	
	D A breakage plate	
GP 10005		C
	What can cause major damage to a compressor?	
	A A closed inlet connection	
	B A too low operating speed	
	C Liquid intake	

<i>Number</i>	<i>Source</i>	<i>Correct answer</i>
	D Lack of a pressure difference between the intake and outflow sides	
GP 10006	Why is a low pressure switch often installed on the intake side of a compressor? A To protect the compressor B To avoid intake of liquid C To avoid too low a temperature D To avoid a depression in the cargo tanks	D
GP 10007	Why is a compressor required for the use of a deck pump? A To provide the deck pump with liquid B To empty the loading installation C To create a pressure difference in the pump D To transfer cargo into another cargo tank	A
GP 10008	What is the purpose of a separator on the intake side of a compressor? A To lubricate the compressor B To collect liquid so that it is not lost C To avoid damaging the compressor with liquid intake D To make it possible to eliminate the liquid gathered in the container using a flexible tube	C
GP 10009	Why is there an established maximum pressure difference between the intake and outflow sides of compressors? A To avoid too great a pressure difference in cargo tanks B To avoid overloading the compressor motor C To avoid a depression in the cargo tanks D To avoid the opening of the quick-action stop valves	B