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ECONOMIC COMMISSION FOR EUROPE

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

Chemicals - practice, objectives 5, 6, 7

**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).

¹ Distributed in German by the Central Commission for the Navigation of the Rhine under the symbol CCNR/ZKR/ADN/WP.15/AC.2/2009/26.

2. This document contains the lists of questions proposed by CCNR in respect of practical knowledge for the “chemicals” examination:

- Examination objective 5: Gas-freeing
- Examination objective 6: Loading, unloading
- Examination objective 7: Heating

PRACTICE
Examination objective 5: Gas-freeing

Number	Source	Correct answer
CP 410	9.3.2.26	B
Where should the residual cargo tank be located on board a tank vessel of type C?		
<p>A Always below deck in the cargo area at a minimum distance from the hull equal to one quarter of the vessel's breadth</p> <p>B In the cargo area at a minimum distance from the hull equal to one quarter of the vessel's breadth</p> <p>C Always below deck in the cargo area</p> <p>D According to ADN, there is no requirement</p>		
CP 501	7.2.3.7.1	A
Unloaded tanks that have contained substances of Class 6.1 must be freed of gases. Where is this permitted?		
<p>A Only at the locations designated or approved by the competent authority</p> <p>B Always during navigation, but the tank lids should remain closed</p> <p>C Always during navigation, except within the area of locks and their lay-bys.</p> <p>D Always during navigation, but gas-freeing should be carried out using a ventilation device</p>		
CP 502	7.2.3.7.3	B
Cargo tanks have contained a substance of Class 8, packing group I. During gas-freeing in normal circumstances, what is the maximum allowable concentration of gases in the vented mixture at the outlet?		
<p>A Less than 1% of the lower explosive limit</p> <p>B Less than 10% of the lower explosive limit</p> <p>C Not more than 20% of the lower explosive limit</p> <p>D Less than 50% of the lower explosive limit</p>		

PRACTICE
Examination objective 5: Gas-freeing

Number	Source	Correct answer
CP 503	7.2.3.7.4	C
<p>When the gas concentration in the accommodation area reaches what level should gas-freeing operations of empty cargo tanks be interrupted?</p> <p>A At a concentration of more than 1% of the lower explosive limit</p> <p>B At a concentration of more than 10% of the lower explosive limit</p> <p>C At a concentration of more than 20% of the lower explosive limit</p> <p>D At a concentration of more than 50% of the lower explosive limit</p>		
CP 504	7.2.3.7.2	D
<p>May gas-freeing be carried out in the lay-by of a lock?</p> <p>A Yes, but all stipulations in respect of gas-freeing should be respected</p> <p>B Yes, but only if the lay-by is not within a densely populated area</p> <p>C Yes, but only if there is no risk involved for the crew</p> <p>D No, gas-freeing in this area is prohibited in all circumstances</p>		
CP 505	7.2.3.7.3	B
<p>Cargo tanks have contained a substance of Class 6.1. It is not practicable to carry out gas-freeing at the location designated or approved for this purpose by the competent authority. During gas-freeing while the vessel is under way in normal circumstances, what is the maximum allowable concentration of gases in the vented mixture at the outlet?</p> <p>A Not more than 1% of the lower explosive limit</p> <p>B Not more than 10% of the lower explosive limit</p> <p>C Not more than 20% of the lower explosive limit</p> <p>D Not more than 50% of the lower explosive limit</p>		

PRACTICE
Examination objective 5: Gas-freeing

Number	Source	Correct answer
CP 506	8.3.5	D
<p>Outside the cargo area, you wish to carry out repair or maintenance work requiring the use of an open flame. During gas-freeing is this permitted without an authorization from the competent authority?</p> <p>A Yes, but only if the doors and openings of the service spaces in question are closed</p> <p>B Yes, this is permitted in the service spaces outside the cargo area in all circumstances</p> <p>C Yes, outside the cargo area there is no need for an authorization from the competent authority</p> <p>D No, since gas-freeing is being carried out</p>		
CP 507	7.2.3.7.1	A
<p>Who is competent to designate locations for gas-freeing?</p> <p>A The competent authority</p> <p>B The vessel's inspection body</p> <p>C The medical service</p> <p>D The river police</p>		
CP 508	8.3.5	C
<p>When is a certificate attesting to the totally gas-free condition of the vessel required on board?</p> <p>A Before the blue cone(s) or blue light(s) may be withdrawn after unloading</p> <p>B After unloading, before another substance may be loaded</p> <p>C Before repairing the hull at a shipyard</p> <p>D Before entering a cargo tank</p>		

PRACTICE
Examination objective 5: Gas-freeing

Number	Source	Correct answer
CP 509	7.2.3.7.3	A
<p>Gas-freeing is not practicable at a location designated or approved for this purpose by the competent authority. While the vessel is under way, you carry out gas-freeing of cargo tanks having contained UN No. 1093 ACRYLONITRILE, STABILIZED. Should you interrupt gas-freeing when passing under a bridge?</p> <p>A Yes, since gas-freeing of this substance is not permitted under bridges</p> <p>B Yes, since gas-freeing of any substance should never be carried out under a bridge</p> <p>C No, gas-freeing of this substance may continue</p> <p>D No. Gas-freeing of cargo tanks that have contained this substance should never be carried out while the vessel is under way</p>		
CP 510	7.2.3.7.2	C
<p>While the vessel is under way, you carry out gas-freeing of cargo tanks that have contained UN No. 1106 AMYLAMINE. Should you interrupt gas-freeing while passing under a bridge?</p> <p>A Yes, since gas-freeing of this substance is not permitted under bridges</p> <p>B Yes, since gas-freeing of any substance should never be carried out under a bridge</p> <p>C No, gas-freeing of this substance may continue</p> <p>D No. Gas-freeing of cargo tanks that have contained this substance should never be carried out while the vessel is under way</p>		
CP 511	8.1.2.1 (g)	C
<p>After effecting measurements, the master decides of his own accord to withdraw the blue cone(s) or blue light(s). What else should he do?</p> <p>A Nothing else</p> <p>B Communicate the measurement results to the nearest competent authority</p> <p>C Record the measurement results in the book</p> <p>D Inform the river police of his decision</p>		

PRACTICE
Examination objective 5: Gas-freeing

Number	Source	Correct answer
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CP 512 7.2.3.7.5

B

What parts of the vessel should be gas-freed before the master may withdraw the blue cone(s) or blue light(s)?

- A All the cargo tanks, pipes for loading and unloading, residual cargo tanks and unloading pumps
- B All the cargo tanks
- C All the cargo tanks and pipes for loading and unloading
- D All the cargo tanks and residual cargo tanks

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 601	9.3.2.21.1	B
<p>The cargo tanks of a tank vessel of type C should be provided with a mark inside the tank indicating the degree of filling. At what degree of filling should it be set?</p> <p>A 90% B 95% C 97.5% D 98%</p>		
CP 602	9.3.2.21.1	C
<p>Each cargo tank of a tank vessel of type C should be provided with a high level sensor for actuating the facility against overflowing. At what degree of filling should the sensor be set to actuate at the latest?</p> <p>A 90% B 95% C 97.5% D 98%</p>		
CP 603	9.3.2.21.1	A
<p>Each cargo tank of a tank vessel of type C should be provided with an alarm. What is the degree of filling at which the alarm should activate at the latest?</p> <p>A 90% B 95% C 97.5% D 98%</p>		
CP 604		D
<p>What is the function of a high-velocity venting device?</p> <p>A To enable cargo samples to be collected rapidly from a tank without having to open it B To protect a cargo tank against a possible explosion in the vapour pipe C To activate an alarm at a degree of filling of 97.5% and thus serve as a guarantee against overflowing D To prevent unacceptable overpressure in the cargo tanks</p>		

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
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CP 605

B

What is the function of an anti-detonation device?

- A To remove gases during loading and regulate pressure variations in the cargo tanks
- B To protect a cargo tank against a possible explosion in the vapour pipe
- C To control the pressure in the vapour pipe during loading, unloading, cleaning and transport
- D To serve as a guarantee against overflowing, activating at 97.5%

CP 606

C

You are required to transport UN No. 1098 ALLYL ALCOHOL. What is the minimum allowable setting of the high-velocity venting devices?

- A 10 kPa
- B 20 kPa
- C 40 kPa
- D 50 kPa

CP 607

A

What is the advantage of a stripping system?

- A To ensure little cargo residue remains in the cargo tanks and in the pipes for loading and unloading
- B To avoid the need to clean the tanks between the unloading of one substance and the loading of another, different one
- C To ensure large quantities of residual cargo remain in the cargo tanks
- D To avoid the need to empty the pipes for loading and unloading

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 608	9.3.2.25.2	C
	Are pipes for loading and unloading permitted below deck?	
	A Yes, if they have the proper marking	
	B Yes, if they are positioned a quarter of the vessel's breadth from the hull	
	C No, unless they are located inside the cargo tanks or inside the pump-room	
	D No, this is never permitted	
CP 609		deleted
CP 610	3.2, Table C	B
	You are required to transport UN No. 2218 ACRYLIC ACID, STABILIZED. What is the maximum degree of filling permitted?	
	A 91%	
	B 95%	
	C 97%	
	D 98%	
CP 611	3.2, Table C	C
	You are required to transport UN No. 2218 ETHANOLAMINE. What is the maximum degree of filling permitted?	
	A 91%	
	B 95%	
	C 97%	
	D 98%	
CP 612	3.2, Table C	D
	You are required to transport UN No. 1208 n-HEXANE. What is the minimum allowable setting of the high-velocity vent valve?	
	A 50 kPa	
	B 35 kPa	
	C 25 kPa	
	D 10 kPa	

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 613	3.2, Table C	B
<p>You are required to transport UN No. 2023 EPICHLOROHYDRIN. What is the type of sampling device that, at the very least, you should use to take samples?</p> <p>A Closed B Partly closed C Open D For this substance, the type of sampling device is not prescribed</p>		
CP 614	9.3.2.21.5	A
<p>Can the high-level sensor to prevent overflowing be connected to the level alarm device?</p> <p>A No, but it may be connected to the level gauge B Yes, and it may also be connected to the level gauge C Yes, it may be dependent on the level alarm D Yes, it should be dependent on the level alarm</p>		
CP 615		C
<p>Why is the float of some level gauges equipped with a magnet?</p> <p>A To allow for two measurements to be taken simultaneously B To ensure that the float always remains on the cargo surface C To provide a separation between the cargo and the measuring device in order to protect against explosions D To enable lowering of the float during unloading</p>		
CP 616		B
<p>What is the function of a common vapour pipe or piping?</p> <p>A Such pipes collect the gas formed during transport B Such pipes evacuate to the shore facility the gases and vapours which form during loading C Such pipes evacuate to the cargo tank being loaded the gases and vapours which form during loading D Such pipes are only found on tank vessels of type G and are intended to carry certain gases</p>		

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
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CP 617

B

A cargo tank contains 20,000 litres of a substance at a temperature of 8 °C. The temperature of the cargo is brought to 50 °C. The expansion coefficient of the substance is 0.001 °C⁻¹. What is the new volume?

- A 19,160 litres
- B 20,840 litres
- C 21,000 litres
- D 22,520 litres

CP 618

B

3,000 litres of aniline are at a temperature of 2 °C. The expansion coefficient of aniline is 0.00084 °C⁻¹. What is the volume of this quantity of aniline at 20 °C?

- A 2,955 litres
- B 3,045 litres
- C 3,136 litres
- D 3,733 litres

CP 619 8.1.10

C

Tank vessels are required to have a loading journal on board. For how long should the original of the loading journal be kept on board?

- A 1 month
- B 6 months
- C 12 months
- D 24 months

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 620	7.2.4.24	B
May the fuel tanks be filled while a tank vessel is being unloaded?		
<p>A Yes, since unloading of cargo tanks and refueling are not related</p> <p>B No, unless the competent authority has granted an exception</p> <p>C No, since during loading and unloading, nothing else may be loaded</p> <p>D This is not permitted unless the supply vessel has a certificate of approval</p>		
CP 621	7.2.4.24	C
May different dangerous goods be loaded simultaneously into a tank vessel if the vessel meets the relevant technical requirements?		
<p>A No</p> <p>B Yes, but only with the approval of the competent authority</p> <p>C Yes</p> <p>D Yes, but no more than two different dangerous goods may be loaded simultaneously</p>		
CP 622		A
On what does the maximum degree of filling of a cargo tank depend?		
<p>A On the density of the substance to be transported and the maximum allowable density indicated in the certificate of approval</p> <p>B On the type of tank vessel and the maximum allowable density indicated in the certificate of approval</p> <p>C On the opening pressure of the high-velocity vent valve and the density of the substance</p> <p>D On the type of tank vessel and the opening pressure of the high-velocity vent valve</p>		

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 623	3.2, Table C	D
<p>You are required to load a cargo of UN No. 1167 DIVINYL ETHER, STABILIZED onto your tank vessel. Should the air first be evacuated from the cargo tanks and loading and unloading pipes by means of inert gases?</p> <p>A No, this is not necessary for this substance B No, since it is a substance of Class 3, this operation is not necessary C Yes, since it is a substance of packing group I D Yes, since this is prescribed in Column (20) of Table C</p>		
CP 624	3.2, Table C	A
<p>You are required to load a cargo of UN No. 1218 ISOPRENE, STABILIZED onto your tank vessel. Should the air first be evacuated from the cargo tanks and loading and unloading pipes by means of inert gases?</p> <p>A Yes, since this is prescribed in Column (20) of Table C B No, this is prescribed only for substances of Class 6.1 C Yes, since it is a substance of packing group I D No, this is not necessary for this substance</p>		
CP 625	3.2, Table C	D
<p>You are required to load a cargo of UN No. 1307 XYLENES onto your tank vessel. Should the air first be evacuated from the cargo tanks and loading and unloading pipes by means of inert gases?</p> <p>A Yes, since this is prescribed in Column (20) of Table C B No, this is only prescribed for substances of Class 6.1 C No, this is only prescribed for substances of packing group I D No, this is not necessary for this substance</p>		

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 626	7.2.4.21.3 You are required to load UN No. 1593 DICHLOROMETHANE onto your tank vessel. The certificate of approval sets the permissible density at 1.1. What is the maximum degree of filling in this case? A 82.7 % B 95 % C 97 % D 97.5 %	A
CP 627	7.2.4.21.3 You are required to load UN No. 1708 TOLUILIDINES onto your tank vessel. The certificate of approval sets the permissible density at 1.1. What is the maximum degree of filling in this case? A 90.9 % B 91 % C 95 % D 97 %	C
CP 628	7.2.4.21.3 You are required to load UN No. 1848 PROPIONIC ACID onto your tank vessel. The certificate of approval sets the permissible density at 1.0. What is the maximum degree of filling in this case? A 96 % B 95 % C 97 % D 99 %	C

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 629	1.4.3.3 (m), 7.2.4.10	A
<p>You want to start loading. The checklist has not yet been signed by the loading installation. The person in charge of the loading installation assures you that he will give it to you after loading, along with the transport document. Is this permitted?</p> <p>A No, absolutely not B Only if the new cargo is the same as the previous cargo C Only if you have already signed the checklist D Yes, as you know what you are loading</p>		
CP 630	9.3.2.25.10	A
<p>What residual quantity may remain after stripping?</p> <p>A 5 litres per cargo tank and 15 litres per pipe system B 15 litres in total C 15 litres per cargo tank and 5 litres per pipe system D 5 litres per cargo tank and 5 litres per pipe system</p>		
CP 631	7.2.3.20.1, 9.3.2.11.5	D
<p>On a tank vessel of type C, may the double-hull spaces and double bottoms be used for ballasting purposes?</p> <p>A Yes, without any restrictions, during transport of substances for which type C is not prescribed B No, not even for empty journeys C No, double-hull spaces and double bottoms should in all circumstances be kept dry and may thus not contain any ballast installations D Yes, if this is taken into account in the damage-control calculations</p>		

PRACTICE
Examination objective 6: Loading, unloading

Number	Source	Correct answer
CP 632	9.3.2.25.8 (b)	D
<p>A tank vessel of type C is equipped with piping to collect water ballast in a cargo tank. With what should the junction between the loading and unloading pipes be fitted?</p> <p>A A high-velocity vent valve B An automatic shut-off valve C A flame-arrester D A non-return valve</p>		
CP 633	3.2, Table C	B
<p>Which of the following substances crystallizes at temperatures below 4 °C?</p> <p>A UN No. 1090 ACETONE B UN No. 1114 BENZENE C UN No. 1125 n-BUTYLAMINE D UN No. 1282 PYRIDINE</p>		
CP 634	3.2, Table C	D
<p>Which of the following substances may be transported at temperatures below 4 °C when heating is not possible?</p> <p>A UN No. 1114 BENZENE B UN No. 1145 CYCLOHEXANE C UN No. 1307 p-XYLENE D UN No. 2055 STYRENE MONOMER, STABILIZED</p>		
CP 635		C
<p>During the transport of dangerous goods, a layer of nitrogen is sometimes placed above the cargo. Why is this?</p> <p>A To prevent movement of the cargo B To cool the cargo C To isolate the cargo from the external air D To maintain the temperature of the cargo at a constant level</p>		

PRACTICE
Examination objective 7: Heating

Number	Source	Correct answer
CP 701	3.2, Table C	A
Is it advisable to heat a cargo of UN No. 2348 n-BUTYL ACRYLATE, STABILIZED during transport?		
A No, since this could cause polymerization B Yes, as long as no gases form in the cargo C Yes, since the substance is stabilized D Yes, since this facilitates pumping of the substance		
CP 702		B
When is it advisable to heat certain substances?		
A If they polymerize readily B If they have a very high viscosity C If they are self-reactive D If they decompose readily		
CP 703		C
When is it advisable to heat certain substances?		
A If they are thermally unstable B If they emit a lot of gas C If they could solidify during loading D If they decompose readily		
CP 704	3.2, Table C	D
Is it advisable to heat UN No. 1999 TARS, LIQUID?		
A No, since it is highly explosive B No, since it has a very low solidification point C No, since this could result in polymerization D Yes, since it should not be allowed to solidify. The temperature during carriage should be kept above the melting point		

PRACTICE
Examination objective 7: Heating

Number	Source	Correct answer
CP 705	3.2, Table C A cargo tank is loaded with UN No. 1831 SULPHURIC ACID, FUMING. Can the heating coils in this cargo tank contain water? A Yes, since fuming sulphuric acid does not react with water B Yes, the heating coils can always contain water C No, during unheated transport, the heating coils should never contain water D No, this is prohibited during the transport of fuming sulphuric acid	D
CP 706	3.2, Table C A vessel is carrying UN No. 2448 SULPHUR, MOLTEN. What is the maximum allowable temperature of the cargo during transport? A 100 °C B 120 °C C 150 °C D 250 °C	C
CP 707	3.2, Table C In ADN, where is information on a substance's density to be found? A In 3.2, Table A B In 3.2, Table B C In 3.2, Table C D ADN does not contain any information on the density of substances	C
CP 708	 The temperature correction factor allows the loaded tonnage to be calculated from the volume in m ³ . From where is the correction factor obtained? A The loading installation B The instructions in writing C The traffic control authority D The certificate of approval	A

PRACTICE
Examination objective 7: Heating

Number	Source	Correct answer
CP 709	7.2.4.21.2	A
<p>A cargo at elevated temperature, e.g. 75 °C, is loaded. The cargo should be kept at this temperature during transport. May the maximum degree of filling be exceeded in this case?</p> <p>A No, since space is required in the cargo tank in case the temperature should rise further</p> <p>B Yes, since the maximum degree of filling is prescribed for 15 °C</p> <p>C Yes, since the temperature will fall rather than rise</p> <p>D No, unless the density of the substance is lower than the density specified in the certificate of approval</p>		
CP 710	3.2, Table C	B
<p>A tank vessel is equipped with only one possibility of heating cargo. May it transport UN No. 1764 DICHLOROACETIC ACID at an external temperature of 12 °C?</p> <p>A No, the vessel should be equipped with a heating installation on board</p> <p>B Yes, this is permitted</p> <p>C No, below this external temperature, the substance may not be transported in any circumstances</p> <p>D No, this is not permitted since the temperature of the substance should be kept at exactly 14 °C and this is not possible without a heating installation on board</p>		
CP 711	3.2, Table C	C
<p>A cargo tank is loaded with UN No. 2796 BATTERY FLUID, ACID. Can the heating coils be filled with water?</p> <p>A Yes, if the heating coils are properly closed</p> <p>B Yes, the heating coils should always be filled with water</p> <p>C No, this is prohibited during transport of this substance</p> <p>D No, during unheated transport, the coils should never contain water</p>		

PRACTICE
Examination objective 7: Heating

Number	Source	Correct answer
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CP 712 3.2, Table C

A

A cargo tank is loaded with UN No. 2683 AMMONIUM
SULPHIDE SOLUTION. Can the heating coils be filled with
water?

- A Yes, if the heating coils are properly closed
- B Yes, since the cargo should be able to be heated
- C No, this is prohibited during transport of this substance
- D No, during unheated transport the coils should never
contain water
