

**PARTE II      RULES FOR THE CONSTRUCTION  
AND CLASSIFICATION OF SHIPS  
IDENTIFIED BY THEIR MISSION**

**TITLE 35      OIL RECOVERY SHIPS (AUXILIARY  
SHIPS FOR POLLUTION PREVEN-  
TION AND CONTROL)**

**SECTION 6      PIPING**

CHAPTERS

- A      APPROACH
- B      MATERIALS AND WORKMANSHIP  
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- C      PRINCIPLES FOR THE CONSTRUCTION  
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## CHAPTER A APPROACH

### CHAPTER CONTENTS

- A1. APPLICATION
  - A2. DEFINITIONS - **See Title 11**
  - A3. TECHNICAL DOCUMENTS - **See Title 11**
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### A1. APPLICATION

#### 100. Pipe lines

101. The requirements of the present Title 35, Section 6 are additional to those in Part II, Title 11, Section 6 and applicable to ships with intended class notation "RecOil" both Class 1 and Class 2 except as specified otherwise.

102. The RBNA may, after special analysis, allow changes of when applied to small vessels (under 500 GT).

## CHAPTER E OIL RECOVERY PIPING

### CHAPTER CONTENTS

- E1. OIL RECOVERY PIPING
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### E1. OIL RECOVERY PIPING

#### 100. Piping for oil recovery

101. Vessels covered by this Title 35 are to be provided of an oil recovery piping system independent from all other piping systems. The arrangement is to be such that in no case the recovered oil can be directed to other than cargo tanks.

102. The system is to meet the requirements of this Title 35.

103. The piping system for recovered oil is not to pass through machinery spaces, except for sections of the piping fully welded with positive shut off valves located outside the machinery space and operated from an accessible location on the main deck to cut off the oil flow in case of rupture of the piping line or fire. Accessories such as pumps, manifolds, valves, flanges, connections with tube sleeves and other sources of vapor leakage are not to be located in machinery spaces.

104. The piping systems for recovered oil are not to pass through fuel oil tanks unless they are fully welded, without flanges or other connections.

105. The piping systems for recovered oil passing through ballast tanks are to be of reinforcing steel. Special consideration will be given to ferrous materials having properties of corrosion resistance.

106. Provisions are to be made for expansion of the piping inside the tanks.

107. The piping system will be identified by color coding to distinguish from any other systems.

#### 200. Cargo pumps

201. The cargo pumps are to be designed so to minimize the risk of sparking.

All the pumping system is to be located outside the Engine Room.

202. Caution is to be taken in the installation of pumps to prevent leaks through the sealing.

203. Where the pump shaft passes through a gas-tight bulkhead, flexible couplings are to be provided in the shaft between the pump and its driver, and a sealing that can be lubricated from outside the compartment is to be fitted in the bulkhead. The seal is to be of anti-sparking construction.

204. If an expansion joint is added to the system, it is to be tested before being fitted.

205. A relief valve of appropriate type is to be fitted in the discharge line of the cargo pump, discharging back to the suction in case of overpressure. These valves are not necessary when the system is provided with centrifugal pumps only designed so that the output pressure cannot exceed the design pressure of the piping.

206. A pressure gauge is to be fitted to the discharge of each cargo pump and when the pumps are operated by internal combustion engines located outside the pump room, additional gauges are to be fitted which are visible from the control station.

207. The control panels of the cargo pumps located on the deck are to be provided by pressure indicators. The maximum permitted pressure is to be marked.

#### 300. Discharge at the bow or at the stern

301. Where connections are provided for discharging at the stern or at the bow, the piping connections outside the cargo area are to be fully welded except for connections to the manifold or equipment.

302. A shut-off valve and a blind flange or removable spool are to be provided in the branches of the main piping line.

303. The area comprised within a radius of 3 meters from the valve manifold and the perimeter of the containment coaming shall be considered as hazardous area regarding the installation of electrical equipment or other sources of vapor ignition.

303. Cargo lines outside the cargo area shall have means of draining to a slop tank or cargo tank.

303. A spill tray for containment is to be fitted under the manifold.

304. A space of a radius of 3 metres around the manifold is to be considered as restricted area with regard to electrical equipment or other sources of vapour ignition.

#### 400. Heating coils

401. Where heating coils are installed in cargo tanks, they are to pass through the deck.

During the operation of collecting oil, they are to be isolated with blind flange.

402. During the oil recovery operation the coils are to be isolated by a removable spool and / or blind flange.

## CHAPTER F HULL PIPING SYSTEM

### CHAPTER CONTENTS

- F1. BILGE WATER – DRAINAGE
  - F2. FIREFIGHTING PIPING SYSTEM
  - F3. BALLAST
  - F4. AIR VENTING AND OVERFLOW PIPES, SOUNDING/ULLAGE PIPES AND TANK LEVEL INDICATORS
  - F5. DRINKING WATER
  - F6. COMPARTMENT VENTILATION
  - F7. HYDRAULIC POWER SYSTEMS FOR HULL ESSENTIAL SERVICES
  - F8. FIRE PUMPS AND FIREFIGHTING PIPING SYSTEM FOR SHIPS WITH  $GT \geq 500$
  - F9. FIXED FIRE-FIGHTING SYSTEMS
  - F10. FIXED GAS FIRE EXTINGUISHING
  - F11. FIXED FOAM FIRE EXTINGUISHING SYSTEMS FOR SHIPS BUILT FROM 01.01.2014
  - F12. REQUIREMENTS FOR EXPANSION FOAM FIRE-EXTINGUISHING SYSTEMS APPLICABLE BEFORE 01.01.2014
  - F13. FIXED PRESSURE WATER SPRAYING AND WATER-MIST FIRE-EXTINGUISHING SYSTEMS
  - F14. AUTOMATIC SPRINKLER, FIRE DETECTION AND FIRE ALARM SYSTEMS
- 

### F2. FIRE-FIGHTING SYSTEMS

- 100. Principles  
– See Title 11
- 200. Fire pumps  
– See Title 11

### 300. Main line and hydrants

301. The diameter of the fire and service water main line is to be adequate to ensure the effectiveness of the distribution of the maximum flow required from the fire pumps operating simultaneously, and sufficient to launch, through nozzles and

conditions specified in paragraphs that follow, two water jets at a distance not less than 15 m.

302. The number and location of the hydrants are such that at least two solid water jets, not from the same hydrant, one of which is provided by a single section of the hose, can reach any part of the vessel normally accessible to the crew with the vessel sailing, as well as any part of the cargo compartment, when empty. Each hydrant shall be visible from a fire station. A minimum of three fire hydrants are to be installed on the main deck in the "cargo zone".

303. The suction of raw water for cooling and fire fighting is to be done through the low sea chests.

**400. Fire hoses**

- See Part II, Title 11, Section 3, Chapter D.

**500. Couplings and nozzles**

- See Part II, Title 11, Section 3, Chapter D.

**F4. VENT, OVERFLOW, SOUNDING/ULLAGE AND LEVEL GAUGES**

**100. Vent and overflow pipes in tanks of oil recovered**

101. The present Subchapter F4 comprises requirements in addition to those of Part II, Title 11, Section 6, F.4.

102. The area of the sections of pipes of vent and overflow is to be calculated to permit a flow of 125% of the input flow in order to avoid that the pressure at any cargo tank exceeds the design value. However, the inner diameter of each vent is not be less than 63 mm.

103. The vents of the oil recovery tanks are to lead to the open, and are to be at a minimum height of 2.4 meters from the deck, and fitted at least with:

- a. flameproof wire gauze made of corrosion resistant material easily removable for cleaning, and
- b. closing appliances

104. The outputs of the vents of the recovery oil tanks are to be at a minimum horizontal distance of 3 meters measured horizontally from the nearest air intake or opening to accommodations, control stations, service and machinery spaces of category A and other gas-safe spaces and from ignition sources.

105. The use of portable vents intended for use only during operations of oil collecting of oil may be considered by RBNA.

**200. Filling cargo tanks – safety devices.**

201. The cargo tanks of ships Class 1 and Class 2 are to be fitted with a high level alarm of the recovery oil tank (s) triggering when the tank level reaches 95% of its capacity. The alarm is to be individual for each tank and audible in every area of operation of the vessel. Alternatively the vessel may be fitted with an overflow control system.

202. The overflow system and/or the high level alarm are to be approved by RBNA.

203. The opening to the sounding is to allow the measurement rate of filling with the aid of a sounding rod.

**F6. COMPARTMENT VENTILATION**

**100. General**

101. Ventilation systems are to be installed for compartments with risk of gas or without risk of gas, independent from one another.

102. The ventilation intakes are to be located outside of the hazardous areas on open decks.

**200. Ventilation of recovered oil pump room**

201. The compartments of cargo pumps are to be provided with a ventilation system with capacity of twenty (20) changes per hour, based in the total volume of the compartment.

202. The system is to be equipped with mechanical exhaustion, and mechanical or natural intake.

203. The arrangement of pipes and vent outputs is to be done to purge all areas of the compartment.

204. The air vents are to be 3 meters away from air intakes or other sources of ignition, and are to be on at least two meters high from the deck.

205. The ventilation intakes are to be away from hazardous areas. Protection screens of not more than 13 mm square mesh are to be fitted on ventilation duct intakes and outlets.

206. The ventilation fans are to be of anti-sparking construction, as specified below:

- a. impellers or housing of nonmetallic construction, taking into account the elimination of static electricity;
- b. impellers and housing of nonferrous materials;
- c. impellers and housing of austenitic stainless steel;

- d. impellers ferrous substrate and not less than 13 mm of clearance between the blade tip and the housing.
- e. Any combination of aluminum or magnesium alloys in a stationary or rotating component, and another ferrous component stationary or rotating is considered a risk of sparking and is not be used in such places.
207. Quick shut off devices are to be in ventilator motors at the time of activating the fixed fire extinguishing system.
208. The outputs of the exhausters of the compartment of cargo pumps are to be provided with screen flame arrestor.
209. The following instructions are to be posted at the entrance of the cargo pump compartment:

“Before entering the pump room make sure it contains no toxic gases.”

“Keep the accesses closed”

“Evacuate immediately in case of gas or fire alarm”

210. Ventilation ducts are not to lead through accommodations, service and machinery spaces or other similar spaces.

### **300. Ventilation of other hazardous zones**

301. Hazardous zones enclosed that are not cofferdams or tanks, which do not contain sources of vapor leakage such as pumps, valve manifolds, flanges or valves for oil collection systems are to be provided with a ventilation system capable of providing at least eight (08) changes per hour based on the total volume of the compartment.
302. The system is to be equipped with mechanical exhauster and of mechanical or natural operation.
303. The arrangement of pipes and ventilation outputs are to be done so to purge all areas of the compartment.
304. The ventilator motors are to be located outside of space and outside the ventilation ducts.
305. The ventilator motors are to be of anti-sparking construction, according to the item F6.205 above.

### **400. Ventilation of compartments in safe zones**

401. Safe zones having access to hazardous zones are to be provided with gas tight automatic closing doors and a mechanical ventilation system for maintaining an overpressure in the compartment in relation to hazardous zone.
402. A failure of the ventilation system is to trigger an alarm on the bridge.

### **500. Ventilation of machinert compartments**

501. – See Title 11
502. The openings for air intake of internal combustion engines are to be located at a distance of at least 3 meters away from the cargo zone.
503. The ventilation of the machinery spaces is to be designed so that the temperature of the 32° C, the internal ambient temperature not exceeding 40° C, even with all of the hatches closed.
504. The minimum number of air changes is 12 changes per hour based on the total volume of the compartment.
505. The ventilation system is to be capable of avoiding accumulation of toxic, flammable or asphyxiating gases.
504. The flow of ventilation air for the Engine Room should be monitored and with audible and visual alarm on the spot and at the bridge in case of failure.

## **F10. FIXED GAS FIRE-FIGHTING SYSTEMS**

### **100. Fixed CO<sub>2</sub> systems**

101. Where installed, the fixed CO<sub>2</sub> systems are to follow the requirements below.
102. The amount of carbon dioxide on board must be sufficient to provide a minimum amount of free gas according to the highest of the following volumes:
- 40% of the total volume of the largest machinery space to be protected, the excluded part of the skylight above the level at which the horizontal area of the skylight is 40% or less of the horizontal area of the total space considered;
  - 35% of the total volume of the largest machinery space, including the skylight.

The calculations are to be based on a volume of 0.56 m<sup>3</sup> of CO<sub>2</sub> per kgf.

103. The fixed CO<sub>2</sub> system is to permit that:
- 85% of gas can be discharged within 2 minutes;
  - The number, type and location of discharge outputs permit uniform distribution of the protected space.
104. All the control valves are to be located outside the protected space, in a location where they will not be liable to be shut-off by the fire in the space.



105. The valves, piping and fittings are to have bursting pressure of not less than 422 kgf/cm<sup>2</sup>.

106. CO<sub>2</sub> bottles are to be located outside the protected space where they will not be subject to having their operation shut-off by fire in the space.

107. The distribution system is to be equipped with a delay device so that the alarm will sound 30 seconds before tripping.

708. Comply with the requirements on the means of shut-off and muffling provided in Part II, Title 32, Chapter D5, 300 sub-chapters. and 400.

**200. Fire fighting system on deck**

See Part II, Title 35, Section 3, E.11

**CHAPTER G  
MACHINERY PIPING SYSTEM**

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G1. FUEL OIL – See Title 11

G2. LUBRICATION OIL – See Title 11

G3. REFRIGERATING MACHINERY  
– See Title 11

G4. EXHAUST GASES

G5. COMPRESSED AIR SYSTEM – See Title 11

G6. HEATING SYSTEM, STEAM, FEEDING WATER  
AND CONDENSATE  
– See Title 11

G7. THERMAL OIL – See Title 11

G8. HYDRAULIC POWER TO MACHINERY  
ESSENTIAL SERVICES  
– See Title 11

**G4. EXHAUST GASES**

**100. Arrangement**

101. to 104. - See Title 11

105. The outputs of the exhaust gas system of engines or boilers are to be located:

a. At over 2 meters above the deck;

b. At over 3 meters away from the “cargo zone”; and

c. At over 3 meters away from a source of flammable vapour or gas.

106. The exhaust ducts are to be thermally insulated or water cooled.

**200. Protection against fire**

201. - See Title 11

202. The exhaust ducts are to be provided, after the muffler, of spark arrestor device, such as anti-spark screen, exhaust gas turbines or discharging through a water tank.

203. Exhaust outlets of internal combustion engines and boilers are to be located outside of hazardous areas.

**300. Mufflers**

- See Title 11

**400. Thermal insulation**

- See Title 11

**CHAPTER T  
TESTS**

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T1. APPROACH  
- See Title 11

T2. PIPING SYSTEMS  
- See Title 11

T3. EQUIPMENTS –  
See Title 11

T4. ACCESSORIES  
- See Title 11

T5. SPECIAL TESTS FOR LOADING AND UNLOADING SYSTEMS

**T5. SPECIAL TESTS FOR LOADING AND UNLOADING SYSTEMS**

**100. Periodical tests**

101. All pipelines of the loading and unloading systems and their respective hoses are to be subjected to documented

tests with 1.5 times the normal working pressure in periods of a maximum 12 months.

102. The date of the last test is to be painted in visible location of the systems.

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