

**Amendments to the “Rules for the Classification of Ships”:**

- **Part C, Chapter 1, Section 10: Piping Systems**
- **Part F, Chapter 13, Section 17: Fire Protection (FIRE)**
- **Part F, Chapter 13, Section 26: Exhaust Gas Cleaning Systems (EGCS-SOX and EGCS-NOX)**

RFC/002/AMN/08

*Effective from 1/4/2021*



# SECTION 10 PIPING SYSTEMS

## 1 General

### 1.1 Application

#### 1.1.1

a) General requirements applying to all piping systems are contained in:

- [2] for their design and construction
- [3] for the welding of steel pipes
- [4] for the bending of pipes
- [5] for their arrangement and installation
- [21] for their certification, inspection and testing.

b) Specific requirements for ship piping systems and machinery piping systems are given in Articles [6] to [19].

### 1.2 Documentation to be submitted

#### 1.2.1 Documents

The documents listed in Tab 1 are to be submitted.

#### 1.2.2 Additional information

The information listed in Tab 2 is also to be submitted.

**Table 1 : Documents to be submitted**

| No.                                                                                                                                                                                                                                                          | I/A (1) | Document (2)                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                                                                                                                                                                                                                                                            | A       | Drawing showing the arrangement of the sea chests and ship side valves                                                                                                                            |
| 2                                                                                                                                                                                                                                                            | A       | Diagram of the bilge and ballast systems (in and outside machinery spaces)                                                                                                                        |
| 3                                                                                                                                                                                                                                                            | A       | Specification of the central priming system intended for bilge pumps, when provided                                                                                                               |
| 4                                                                                                                                                                                                                                                            | A       | Diagram of the scuppers and sanitary discharge systems                                                                                                                                            |
| 5                                                                                                                                                                                                                                                            | A       | Diagram of the air, sounding and overflow systems                                                                                                                                                 |
| 6                                                                                                                                                                                                                                                            | A       | Diagram of cooling systems (sea water and fresh water)                                                                                                                                            |
| 7                                                                                                                                                                                                                                                            | A       | Diagram of fuel oil system                                                                                                                                                                        |
| 8                                                                                                                                                                                                                                                            | A       | Drawings of the fuel oil tanks not forming part of the ship's structure                                                                                                                           |
| 9                                                                                                                                                                                                                                                            | A       | Diagram of the lubricating oil system                                                                                                                                                             |
| 10                                                                                                                                                                                                                                                           | A       | Diagram of the thermal oil system                                                                                                                                                                 |
| 11                                                                                                                                                                                                                                                           | A       | Diagram of the hydraulic systems intended for essential services or located in machinery spaces                                                                                                   |
| 12                                                                                                                                                                                                                                                           | A       | Diagram of steam system, including safety valve exhaust and drain pipes                                                                                                                           |
| 13                                                                                                                                                                                                                                                           | A<br>I  | For high temperature steam pipes: <ul style="list-style-type: none"> <li>• stress calculation note</li> <li>• drawing showing the actual arrangement of the piping in three dimensions</li> </ul> |
| 14                                                                                                                                                                                                                                                           | A       | Diagram of the boiler feed water and condensate system                                                                                                                                            |
| 15                                                                                                                                                                                                                                                           | A       | Diagram of the compressed air system                                                                                                                                                              |
| 16                                                                                                                                                                                                                                                           | A       | Diagram of the hydraulic and pneumatic remote control systems                                                                                                                                     |
| 17                                                                                                                                                                                                                                                           | A       | Diagram of the remote level gauging system                                                                                                                                                        |
| 18                                                                                                                                                                                                                                                           | I       | Diagram of the exhaust gas system                                                                                                                                                                 |
| 19                                                                                                                                                                                                                                                           | A       | Diagram of drip trays and gutterway draining system                                                                                                                                               |
| 20                                                                                                                                                                                                                                                           | A       | Diagram of the oxyacetylene welding system                                                                                                                                                        |
| 21                                                                                                                                                                                                                                                           | A       | Drawings and specification of valves and accessories, where required in [2.7]                                                                                                                     |
| <p>(1) A = to be submitted for approval, in four copies;<br/>I = to be submitted for information, in duplicate.</p> <p>(2) Diagrams are also to include, where applicable, the (local and remote) control and monitoring systems and automation systems.</p> |         |                                                                                                                                                                                                   |

## 20 Exhaust gas treatment systems

### 20.1 Application

#### 20.1.1 (1/1/2018)

This Article applies to:

- exhaust gas cleaning systems (scrubbers)
- selective catalytic reduction (SCR) systems.

#### 20.1.2 Applicability of other Rules (1/4/2021)

Exhaust gas treatment systems are regarded as non-essential services, therefore:

- [redundancy is not necessary, and](#)
- testing of materials and components is to be in compliance with the requirements for equipment intended ~~to~~ [for](#) non essential services.

~~In this connection, h~~However, equipment intended to ensure the ship safety or essential to ensure personnel safety (such as but not limited to valves connected to the outer shell, sea water piping, pipes conveying hazardous substances, exhaust gas by-pass valves), is anyway to be ~~considered as inspected and tested as requested for equipment~~ intended ~~to~~ [for](#) essential services ~~for what concerns the certification, inspection and testing.~~

~~Further, when the additional class notations EGCS SOx or EGCS NOx Tier 2 or EGCS NOx Tier 3 are issued, the EGCS and ancillary equipment is regarded as an essential service.~~

### 20.2 Efficiency

#### 20.2.1 (1/1/2018)

When the additional class notations "EGCS-Sox" or "EGCS NOx" are issued, the efficiency of the equipment is to be certified against the requirements of the latest IMO Guidelines published at the Building Contract date.

### 20.3 Exhaust ducting

#### 20.3.1 (1/1/2018)

The parts of the Exhaust gas treatment systems containing exhaust gas are to be in compliance with [18].

When the exhaust gas treatment system may influence the operation of essential machinery, arrangements are to be made to ensure the continuity of the service concerned also in case of possible failures of the exhaust gas treatment system (e.g. exhaust gas bypasses are to be arranged, to enable continued operation of engine intended to drive single essential users in case of filters clogging by particulate matter).

### 20.4 Materials

#### 20.4.1 (1/1/2018)

Materials used for equipment and piping systems are to be suitable with fluids conveyed, taking into account their chemical reactivity.

Aluminium and galvanized pipes are to be avoided for equipment and piping systems in contact with fluids containing sodium hydroxide or acids.

Copper is to be avoided for equipment and piping systems in contact with fluids containing ammonia.

### 20.5 Use of hazardous substances

#### 20.5.1 (1/1/2018)

When hazardous substances are produced, or loaded and stored on board or anyway used in connection with exhaust gas treatment systems, the arrangements are to take into account the risks involved in such a production, loading, storage and use.

Substances containing products listed in the IMDG Code are to be regarded as hazardous substances, unless documented otherwise.

### 20.6 Use of reductants in SCR systems

#### 20.6.1 Use of aqueous and anhydrous ammonia (1/1/2018)

Aqueous and Anhydrous ammonia are not to be used as a reductant in a SCR except where it can be demonstrated that it is not practicable to use a urea based reductant.

Use of Anhydrous ammonia is to be agreed with the Flag Administration.

#### 20.6.2 Use of urea based ammonia (1/1/2021)

Where urea based ammonia (e.g. AUS 40 - aqueous urea solution specified in ISO 18611-1) is used, the storage tank is to be arranged so that any leakage will be contained and prevented from making contact with heated surfaces. All pipes or other tank penetrations are to be provided with manual closing valves attached to the tank. Tank and piping arrangements are to be approved.

The storage tank may be located within the engine room.

The storage tank is to be protected from excessively high or low temperatures applicable to the particular concentration of the solution. Depending on the operational area of the ship, this may necessitate the fitting of heating and/or cooling systems. The physical conditions recommended by applicable recognized standards (such as ISO 18611-3) are to be taken into account to ensure that the contents of the aqueous urea tank are maintained to avoid any impairment of the urea solution during storage.

If a urea storage tank is installed in a closed compartment, the area is to be served by an effective mechanical ventilation system of extraction type providing not less than 6 air changes per hour which is independent from the ventilation system of accommodation, service spaces, or control stations. The ventilation system is to be capable of being controlled from outside the compartment. A warning notice requiring the use of such ventilation before entering the compartment shall be provided outside the compartment

## SECTION 17

## FIRE PROTECTION (FIRE)

### 1 General

#### 1.1 Application

##### 1.1.1 (1/1/2020)

This Section provides the criteria for the assignment of the following additional class notations, in accordance with Pt A, Ch 1, Sec 2, [6.14.23], to passenger and cargo ships as specified in the relevant Articles:

- **FIRE-AS**, assigned to ships with accommodation and service spaces meeting the requirements in Articles [2] and [3]
- **FIRE-MS**, assigned to ships with machinery spaces meeting the requirements in Articles [2] and [4];
- **FIRE-MS (hot-spots)**, assigned to ships with machinery spaces meeting the requirements in Articles [5];
- **FIRE-CS**, assigned to ships with cargo decks and cargo spaces meeting the requirements in [1.1.2] and Articles [2] and [6]; and

- **FIRE**, assigned to ships meeting all the requirements pertinent to the assignment of the previously listed class notations as applicable to the ship type being considered.

##### 1.1.2

Compliance with the requirements of this Section does not absolve the Interested Parties from obligations regarding different and/or more stringent regulations issued by the flag Administration, international organisations or other concerned parties, if applicable.

#### 1.2 Documents to be submitted

##### 1.2.1

The documents listed in Tab 1 are to be submitted to the Society.

**Table 1 : Documentation to be submitted (1/1/2020)**

| No. | I/A (1) | Document (2)                                                                                                                                                                                                               |
|-----|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | A       | Structural fire protection, showing the method of construction, purpose of the various spaces of the ships, fire rating of bulkheads and decks, means of closing of openings in "A" and "B" class divisions, draught stops |
| 2   | A       | Natural and mechanical ventilation systems showing the penetrations in "A" class divisions, location of dampers, means of closing, arrangements of air conditioning rooms                                                  |

(1) A : to be submitted for approval, in four copies  
I : to be submitted for information, in duplicate.

(2) Plans are to be schematic and functional and to contain all information necessary for their correct interpretation and verification such as:

- service pressures
- capacity and head of pumps and compressors, if any
- materials and dimensions of piping and associated fittings
- volumes of protected spaces, for gas and foam fire-extinguishing systems
- surface areas of protected zones for automatic sprinkler and pressure water-spraying, low-expansion foam and powder fire-extinguishing systems
- capacity, in volume and/or in mass, of vessels or bottles containing the extinguishing media or propelling gases, for gas, automatic sprinkler, foam and powder fire-extinguishing systems
- type, number and location of nozzles of extinguishing media for gas, automatic sprinkler, pressure water-spraying, foam and powder fire-extinguishing systems.

All or part of the information may be provided, instead of on the above plans, in suitable operation manuals or in specifications of the systems.

(3) See Pt C, Ch 1, Sec 2, [4.4.1]

(4) For the assignment of the additional class notation **FIRE-MS (hot-spots)** only.

(5) Plans are to be schematic and functional and to contain all information necessary for their correct interpretation and verification such as:

- location of leakage points
- identification and type of leakage points
- type of flammable product that may leak and maximum rate in m<sup>3</sup>/h, when available
- type of arrangement provided to detect, contain or shield the leak and relevant technical details.

conditioning unit of accommodation and service spaces, provided that an automatic fire damper is fitted near the air conditioning unit;

- f) separations between cabins, services spaces and corridors are to be of B-15 class. In this context, an A-0 class division can be considered equivalent to a B-15 class division.

### 3.3 Means of escapes

#### 3.3.1 Passenger ships (1/1/2020)

Spaces having a deck area exceeding 30 m<sup>2</sup> are to be provided with at least two independent escape routes, the primary escape route is to be a door directly to a corridor or an open deck. For spaces having a deck area exceeding 50 m<sup>2</sup> the secondary means of escape is also to consist of a door leading to a corridor, and is to be widely separated from the primary means of escape.

#### 3.3.2 Ships other than passenger ships (1/1/2020)

The following applies:

- dead end corridors are prohibited. A part of a corridor that has a depth not exceeding its width is considered a recess and is acceptable;
- spaces having a deck area exceeding 30 m<sup>2</sup> are to be provided with at least two independent escape routes; the primary escape route is to be a door directly to a corridor or an open deck. For spaces having a deck area exceeding 50 m<sup>2</sup> the secondary means of escape is also to consist of a door leading to a corridor, and is to be widely separated from the primary means of escape;
- furniture and furnishing in stairways and corridors, if any, are to be fixed to the ship's structure and are not to obstruct the escape routes.

### 3.4 Fire detection and alarm system

#### 3.4.1 Passenger ships (1/1/2020)

Heat detectors may be installed in refrigerated chambers and other spaces (such as saunas and steam baths) or areas (galleys above deep fat fryers and ovens) where the presence of vapour or condensation in the normal working conditions is expected.

#### 3.4.2 Ships other than passenger ships (1/1/2020)

In all accommodation, service spaces and control stations there is to be installed an approved automatic fire detection and alarm system of addressable type and in accordance with the Fire Safety Systems Code (FSS Code). Smoke detectors are to be used, except that heat detectors can be installed in refrigerated chambers and other spaces (such as saunas and steam baths) or areas (galleys above deep fat fryers and ovens) where the presence of vapour or condensation in the normal working conditions is expected.

### 3.5 Portable fire extinguishers

#### 3.5.1 Passenger ships (1/1/2020)

The following applies:

- at least one extinguisher is to be provided in pantries and laundries and public spaces;
- at least two extinguishers of suitable type for deep fat fryers are to be provided in the galley;
- extinguishers suitable for use on electrical equipment are to be located as follows:
  - at least two on the navigating bridge; and
  - one close to any electrical switchboard of power not less than 20 kW.

#### 3.5.2 Ships other than passenger ships (1/1/2020)

The following applies:

- two extinguishers are to be provided in corridors or stairways at each deck. In addition, at least one extinguisher is to be located in all pantries, laundries, crew dayrooms and similar spaces
- at least two extinguishers of suitable type for deep fat fryers are to be provided in the galley
- extinguishers suitable for use on electrical equipment are to be located as follows:
  - at least two on the navigating bridge; and
  - one close to any electrical switchboard of power not less than 20 kW.

### 3.6 Hydrants and fire hoses

#### 3.6.1

Hydrants are to be located so that any point of the accommodation spaces can be reached by two streams of water from fire hoses of single length fed by different hydrants: this requirement may be waived for those parts of the accommodation spaces where double length of hoses can be used without the need to bend and twist them.

#### 3.6.2

A fire hose is to be provided for each hydrant.

## 4 Machinery spaces

### 4.1 Emergency escape and access

#### 4.1.1 (1/1/2020)

One of the escape routes from the engine control room is to be independent from the engine room.

#### 4.1.2 (1/4/2021)

Machinery spaces and workshops that are not part of the engine room are to have at least one escape route independent from ~~other machinery spaces~~ [the engine room](#).

### 4.2 Ventilation

#### 4.2.1 (1/1/2020)

At least one of the machinery space fans, is to be of the reversible type and fed by the emergency source of power.

of any internal combustion machinery with a total power output of not less than 375 kW.

#### 4.8.2

The local application system is not to be dependent on the fire main.

#### 4.8.3

The failure of the main source of electrical power is not to put out of order the local application system protecting fire hazard areas in the space where the main source of electrical power is located.

#### 4.8.4

An installation consisting of pumps driven directly by a dedicated diesel engine is to be capable of delivering water at full pressure within 20 seconds.

#### 4.8.5

Use of sea water is not accepted within the first 20 minutes of the functioning of the system. The pump is to be able to operate under all conditions without the use of any self-priming system. The pump and its mover are to be provided with heating unless the space in which they are located has adequate heating facilities.

#### 4.8.6

The pump capacity is to be designed to simultaneously cover risk objects in the same space located at less than 3 m from each other, even if the machinery concerned is protected by separated sections. The same piece of machinery is to be protected simultaneously.

#### 4.8.7

Discharge of water directly into electric generators and engine air intakes is to be avoided.

#### 4.8.8

A test and drain valve is to be fitted. The valve is to be provided with means to secure it in a closed position after use.

#### 4.8.9

The system is to operate automatically by the combined intervention of a smoke detector and a flame detector; however, it is to be possible to operate the system manually.

#### 4.8.10

System components such as section valves, test and drain valves, any accumulators, the pump unit and its power supply and control equipment are to be readily accessible and located outside the protected spaces.

### 4.9 Total flooding fire-extinguishing systems

#### 4.9.1

The following spaces are to be protected by a fixed fire-extinguishing system:

- spaces containing main electric propulsion systems (if fitted), including electric motors if inside the hull, switchboards and transformers serving such motors. This requirement may be waived for those bow thruster rooms not containing other fire risk items;
- spaces containing the main switchboards (of any size) and switchboards with capacity exceeding 1000 kW;
- an engine control room that is not part of the engine room.

#### 4.9.2 (1/4/2021)

The extinguishing media used in spaces in [4.9.1] a) and b) are not to be ~~able to~~ capable of causing damage to ~~sensitive electrical equipment~~ non-redundant essential services.

### 4.10 Portable fire extinguishers

#### 4.10.1 (1/1/2020)

A fire extinguisher suitable for use on electrical equipment is to be located near each electrical switchboard of a power of not less than 20 kW (for switchboards not more than 1 m apart, a single fire extinguisher is deemed sufficient).

#### 4.10.2

At least two fire extinguishers of the type mentioned in [4.1] are to be located in the engine control room.

#### 4.10.3

Fire extinguishers are also to be provided:

- four at the lowest level and at each platform level of each main propulsion engine; and
- one near each auxiliary engine.

## 5 Special Provisions to prevent occurrence of a fire in machinery spaces

### 5.1 Portable fire extinguishers

#### 5.1.1 General (1/1/2020)

The present section applies to the design, operation and maintenance of systems conveying combustible oils, fitted or in transit within machinery spaces, irrespective of its fire category.

### 5.2 Detection and identification of critical points

#### 5.2.1 General (1/1/2020)

A detailed procedure with the aim of planning periodical inspections within the machinery spaces is to be available on board the ship.

The procedure is to include at least the following information:

- intervals between the inspections;
- requirements for preparation of the inspections (plan and list of machinery, piping, etc., run/stop of auxiliary systems) and fast response actions;
- safety measures for the crew and instrumentation (Personal Protective Equipment (PPE), thermal cameras, tools, etc.);
- instruments to record any report, corrective action and follow-up of detected critical points and any anomalies and damages of the items listed in [5.2.2] below;
- technical specifications or reference to technical specification, Material Safety Data Sheet (MSDS) and installation manuals of systems present on board for leaks, spillage or ignition containment and prevention.

#### 5.2.2 (1/1/2020)

The inspection is to be carried out paying attention to the following items, whose anomalies and damages are to be

## SECTION 26

# EXHAUST GAS CLEANING SYSTEMS (EGCS-SOX AND EGCS-NOX)

### 1 General

#### 1.1 Application

##### 1.1.1 (1/7/2017)

The additional class notation **EGCS-SOx** assigned, in accordance with Pt A, Ch 1, Sec 2, [6.14.42], to ships onto which an Exhaust gas cleaning system suitable to reduce the SOx emissions is installed and certified by the Society according to the requirements of this section.

The additional class notation **EGCS-NOx** assigned, in accordance with Pt A, Ch 1, Sec 2, [6.14.42], to ships onto which an Exhaust gas cleaning system suitable to reduce the NOx emissions is installed and certified by the Society according to the requirements of this section.

#### 1.2 Basic principles

##### 1.2.1 (1/4/2021)

The installed equipment is to be certified as complying with the performance standard established by international Regulations and Guidelines, and tested by the Society according to the Rules ~~certified as intended~~ applicable to equipment intended for essential services ~~for the purposes of this Additional Class notations~~, both when installed on new ship or retrofitted to existing ships.

Special consideration will be given to the assignment of the additional class notations to existing ships entering into Tasneef Class as existing ships not built under Society surveillance, previously fitted with properly certified equipment.

### 2 Definitions and acronym

#### 2.1

##### 2.1.1 (1/7/2017)

EGCS: Exhaust gas cleaning system

Nox: Nitrogen oxides

SOx: sulphur oxides

EIAPP: Engine International Air Pollution Prevention Certificate (NOx)

ETM: Exhaust Gas cleaning system (SOx) Technical Manual

OMM: On-board monitoring manual (SOx)

SECP: Ship Emission compliance plan (SOx)

SCR: Selective catalytic reduction

### 3 Documentation to be submitted

#### 3.1

##### 3.1.1 (1/7/2017)

Before the survey for the assignment of the notation is carried out, the following documentation is to be submitted for information:

- EIAPP Certificates relevant to the engines fitted Selective Catalytic Reduction systems;
- NOx Technical files of engines fitted Selective Catalytic Reduction system;
- Testing certificates of each engine fitted with an EGCS for NOx, or of the Selective Catalytic Reduction system, if separately certified;
- ETM of installed Exhaust Gas cleaning systems for SOx, in approved form;
- OMM of installed Exhaust Gas cleaning systems for SOx, in approved form;
- SECP in approved form
- Testing certificates of each EGCS system (SOx) fitted on board.

The Society reserves the right to request the submission of additional documents, if deemed necessary, for the evaluation of compliance of the installed system.

### 4 Requirements

#### 4.1 General

##### 4.1.1 Performance and certification (1/4/2021)

The installed equipment is to be certified as complying with the performance standard established by international Regulations and Guidelines, in particular:

- EGCS for reducing NOx emission are to be certified according to Resolutions MEPC.176(58)(MARPOL Annex VI), MEPC.177(58) (NOx Technical Code 2008) and MEPC. ~~198(62)~~ 291(71) as capable of achieving NOx emission levels conforming to Tier 3 standard.
- EGCS for reducing SOx emission are to be certified according to Resolution MEPC.259(68) as capable of achieving a  $\text{SO}_2\text{e}^2/\text{CO}_2\text{e}^2$  ratio of 4.3 (equivalent to using a fuel with 0.1 % sulphur content) when the connected fuel oil burning equipment is operated at any rating and supplied with fuel with 3.5 % sulphur content.

⇒ All the above mentioned Resolutions are to be applied in the "as amended, repealed or replaced status" in force or applicable at the date of the request of issuance of the additional notation, or at the date of the contract for the supply and installation on board of the equipment, if earlier.



~~d) For the purposes of this Additional Class notation the equipment is to be certified as intended to an essential service and certified by the Society according to the applicable Rules, both when installed on new ship under construction or retrofitted to an existing ship.~~

The equipment is to be tested by the Society according to the Rules applicable to equipment intended for essential services, both when installed on new ships or retrofitted to existing ships.

#### **4.1.2 Inspection and maintenance (1/7/2017)**

Maintenance of the system is to be carried out regularly in accordance with the maker's instructions and internal procedures.

The plan is to describe the list of points to be inspected and the people in charge.

The reports of maintenance activities and inspections are to be maintained for at least three years, and are to be made available, upon Surveyor request, during the survey for the assignment of the notation and subsequent surveys.

#### **4.1.3 Monitoring and recording (1/7/2017)**

The monitoring and recording of the proper operation of the EGCS is to be carried out according to the requirements of the Resolutions quoted in [1.2.1].

The plan is to describe the list of points to be inspected and the people in charge.

Additionally, in case of SCR systems not permanently fitted with a NOx analyser for closed loop control, a periodical NOx measurement is to be carried out by qualified personnel, at intervals not exceeding five years, to check the efficiency of the system and confirm compliance with the requirements in [1.2.1].

## **5 Assignment criteria**

### **5.1 General**

#### **5.1.1 Performance and certification (1/7/2017)**

The additional class notation **EGCS-NOX** is assigned to ships or new buildings upon verification of compliance of the documentation required in [3.1.1] a), b) and c) with the requirements in [4.1.1].

The additional class notation **EGCS-SOX** is assigned to ships or new buildings upon verification of compliance of the documentation required in [3.1.1] d), e), f) and g) with the requirements in [4.1.1].