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STATUTORY INSTRUMENTS

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**1960 No. 1932**

**The Shipbuilding and Ship-repairing Regulations 1960**

**PART V**

**PRECAUTIONS AGAINST ASPHYXIATION,  
INJURIOUS FUMES OR EXPLOSIONS**

**Ventilation of confined spaces**

**48.**—(1) All reasonably practicable steps shall be taken to secure and maintain the adequate ventilation of any confined space in which persons are employed.

(2) Compressed oxygen shall not be used to ventilate any confined space in a vessel and no person employed shall use compressed oxygen for this purpose.

**Precautions against inflammable gas or vapour**

**49.** Where in any confined space in any part of a vessel inflammable solvents are used in the application or removal of paint or there is carried on any other process liable to produce inflammable gas or vapour, effective and suitable provision shall be made by adequate ventilation or by other means to prevent the formation of an inflammable atmosphere in the confined space.

**Precautions against shortage of oxygen**

**50.** No person shall enter or remain in any confined space in a vessel, being a confined space in which there is reason to apprehend that the proportion of oxygen in the air is so low as to involve risk of persons being overcome, unless either—

- (a) the space has been and remains adequately ventilated and a responsible person has tested it and certified that it is safe for entry without breathing apparatus, or
- (b) he is wearing a breathing apparatus of a type approved for the purpose of this Regulation.

**Precautions against dangerous fumes**

**51.**—(1) No person shall enter or remain in any confined space in any part of a vessel, being a confined space in which there is reason to apprehend the presence of any dangerous fumes to such extent as to involve risk of persons being overcome thereby, unless he is wearing a breathing apparatus of a type approved for the purpose of this Regulation, or a responsible person has certified the space as being, for a specified period, safe for entry without breathing apparatus, and the period so specified has not expired; but no person shall enter or remain in the space without breathing apparatus unless he has been warned when the period so specified will expire.

- (2) A space shall not be certified under paragraph (1) of this Regulation unless—
- (a) effective steps have been taken to prevent any ingress of dangerous fumes, and
  - (b) any sludge or other deposit liable to give off dangerous fumes has been removed and the space contains no other material liable to give off dangerous fumes, and

- (c) the space has been adequately ventilated and tested for dangerous fumes and has a supply of air adequate for respiration;

but no account shall be taken for the purposes of sub-paragraph (b) of this paragraph of this Regulation of any deposit or other material liable to give off dangerous fumes in insignificant quantities only.

(3) Where any person is employed in any confined space to which paragraph (1) of this Regulation applies, there shall be provided and kept readily available—

- (a) not less than two sets of breathing apparatus of a type approved for the purpose of this Regulation on board the vessel; and
- (b) not less than two additional sets of such apparatus off the vessel; and
- (c) a lamp or torch of a safety type approved for the purpose of this Regulation with each set of breathing apparatus; and
- (d) not less than two belts and ropes suitable for the purpose of rescue.

The apparatus, belts, ropes, lamps and torches shall be maintained and shall be thoroughly examined, at least once a month or at such other intervals as may be prescribed, by a competent person; and a report on every such examination, signed by the person making the examination and containing the prescribed particulars, shall be kept available for inspection.

(4) A sufficient number of the persons employed shall be trained and practised in the use of the apparatus mentioned in the preceding paragraph of this Regulation and in a method of restoring respiration.

### **Application of Regulations 50 and 51**

**52.** In the case of a shipyard, the provisions of Regulations 50 and 51 shall, as respects the operations carried out in confined spaces formed by the structure of any ship or vessel, or of part of any ship or vessel, under construction or repair, be in substitution for the provisions of section 27 of the principal Act (which relates to precautions in places where dangerous fumes are liable to be present).

### **Removal of dust or fumes**

**53.—(1)** Where in connection with any process carried on on board, in or on the outside of a vessel or part of a vessel there is given off any dust or fume or other impurity of such a character and to such extent as to be likely to be injurious to the persons employed, all practicable measures shall be taken to protect the persons employed against inhalation of the dust or fume or other impurity, and in particular, where practicable, exhaust appliances shall be provided and maintained, as near as possible to the point of origin of the dust or fume or other impurity, to protect such persons against such inhalation.

(2) In the case of a shipyard the provisions of this Regulation shall, as respects the operations carried on on board, in or on the outside of a vessel or part of a vessel, be in substitution for the provisions of section 47 of the principal Act (which relates to the removal of dust or fumes).

### **Rivet fires**

**54.—(1)** Rivet fires shall not be taken into or used in or remain in any confined space on board or in a vessel unless there is adequate ventilation to prevent the accumulation of fumes.

(2) No person employed shall move a rivet fire into any confined space on board or in a vessel unless he has been authorised by his employer to move the fire into that space.

### **Placing of gas cylinders and acetylene generators**

**55.**—(1) No cylinder which contains or has contained oxygen or any inflammable gas or vapour under pressure, and no acetylene generating plant, shall be installed or placed within fifteen feet of any substantial source of heat (including any boiler or furnace when alight) other than the burner or blow-pipe operated from the cylinder or plant.

(2) No such cylinder and no such plant shall be taken below the weather deck in the case of a vessel undergoing repair, or below the topmost completed deck in the case of a vessel under construction, unless it is installed or placed in a part of the vessel which is adequately ventilated to prevent any dangerous concentration of gas or fumes.

(3) It shall be the duty of the persons employed to comply with the foregoing provisions of this Regulation.

### **Further provision as to acetylene generators**

**56.**—(1) The following provisions shall be observed as respects any acetylene generating plant—

- (a) no such plant shall be installed or placed in any confined space unless effective and suitable provision is made for securing and maintaining the adequate ventilation of that space so as to prevent, so far as practicable, any dangerous accumulation of gas;
- (b) any person attending or operating any such plant shall have been fully instructed in its working and a copy of the maker's instructions for that type of plant shall be constantly available for his use;
- (c) the charging and cleaning of such plant shall so far as practicable be done during daylight;
- (d) partly spent calcium carbide shall not be re-charged into an acetylene generator.

(2) No person (whether or not a person employed) shall smoke or strike a light or take a naked light or a lamp in or into any acetylene generator house or shed or in or into dangerous proximity to any acetylene generating plant in the open air or on board a vessel:

Provided that this paragraph shall not apply as respects a generator in the open air or on board a vessel which, since it was last charged, has been thoroughly cleansed and freed from any calcium carbide and acetylene gas.

(3) A prominent notice prohibiting smoking, naked lights and lamps shall be exhibited on or near every acetylene generating plant whilst it is charged or is being charged or is being cleaned.

### **Construction of plant for cutting, welding or heating metal**

**57.**—(1) Pipes or hoses for the supply of oxygen or any inflammable gas or vapour to any apparatus for cutting, welding or heating metal shall be of good construction and sound material and be properly maintained.

(2) Such pipes or hoses shall be securely attached to the apparatus and other connections by means of suitable clips or other equally effective appliances.

(3) Efficient reducing and regulating valves for reducing the pressure of the gases shall be provided and maintained in connection with all cylinders containing oxygen or any inflammable gas or vapour under pressure while the gases or vapours from such cylinders are being used in any process of cutting, welding or heating metal.

(4) Where acetylene gas is used for cutting, welding or heating metal—

- (a) a properly constructed and efficient back-pressure valve and flame arrester shall be provided and maintained in the acetylene supply pipe between each burner or blow-pipe and the acetylene generator, cylinder or container from which it is supplied, and shall be

placed as near as practicable to the burner or blow-pipe, except that these requirements shall not apply where an acetylene cylinder serves only one burner or blow-pipe; and

- (b) any hydraulic valve provided in pursuance of the preceding sub-paragraph shall be inspected on each day by every person who uses the burner or blow-pipe on that day and it shall be the duty of every person employed who uses the burner or blow-pipe to inspect the hydraulic valve accordingly.

(5) The operating valves of burners or blow-pipes to which oxygen or any inflammable gas or vapour is supplied for the purpose of cutting, welding or heating metal shall be so constructed, or the operating mechanism shall be so protected, that the valves cannot be opened accidentally.

### **Precautions after use of apparatus for cutting, welding or heating metal**

**58.**—(1) In the case of apparatus on board a vessel and used for cutting, welding or heating metal with the aid of oxygen or any inflammable gas or vapour supplied under pressure, the precautions specified in the following paragraphs of this Regulation shall be taken when such use ceases for the day or for a substantial period and the apparatus is to be left on board, but need not be taken when such use is discontinued merely during short interruptions of work. The requirements in paragraphs (3) and (4) of this Regulation shall not apply during a meal interval.

(2) Supply valves of cylinders, generators and gas mains shall be securely closed.

(3) Movable pipes or hoses used for conveying oxygen or inflammable gas or vapour shall, in the case of a vessel undergoing construction, be brought to the topmost completed deck or, in the case of a vessel undergoing repair, to a weather deck or in either case to some other place of safety which is adequately ventilated to prevent any dangerous concentration of gas or fumes:

Provided that where, owing to the nature of the work, it is impracticable to comply with the foregoing requirements of this paragraph, the pipes or hoses shall be disconnected from cylinders, generators or gas mains, as the case may be.

(4) When cylinders or acetylene generating plant have been taken below deck as permitted by paragraph (2) of Regulation 55, such cylinders or acetylene generating plant shall be brought to a weather deck or, in the case of a vessel undergoing construction, to the topmost completed deck.

### **Naked lights on oil-carrying vessels**

**59.**—(1) Subject to the provisions of paragraph (2) of this Regulation and to the provisions of Regulation 66, and without prejudice to the provisions of Regulations 64 and 65, no naked light, fire or lamp (other than a safety lamp of a type approved for the purpose of this Regulation) and no heated rivet—

- (a) shall be permitted to be applied to, or to be in, any part of a tanker unless, since oil was last carried in that tanker, a naked light certificate has been obtained and is in force in respect of those parts of the tanker for which, in the opinion of a competent analyst, a naked light certificate is necessary:

Provided that a naked light, fire, lamp or heated rivet of a kind specified in writing by a competent analyst may be applied to, or be in, any part of the tanker so specified;

- (b) shall be permitted—
  - (i) to be in any oil-tank on board or in a vessel in which oil-tank the oil last carried was oil having a flash point of less than seventy-three degrees Fahrenheit (Abel closed test) or was liquid methane, liquid propane or liquid butane, unless a naked light certificate has previously been obtained on the same day and is in force in respect of that oil-tank and of any oil-tank, compartment or space adjacent thereto;

- (ii) to be applied to the outer surface of any oil-tank on board or in a vessel in which oil-tank the oil last carried was such oil as aforesaid, unless a naked light certificate has previously been obtained on the same day and is in force in respect of that oil-tank;
- (iii) to be applied to the outer surface of, or to be in, any compartment or space adjacent to an oil-tank on board or in a vessel in which oil-tank the oil last carried was such oil as aforesaid, unless a naked light certificate has previously been obtained on the same day and is in force in respect of that compartment or space:

Provided that where in any such case referred to in paragraph (i), (ii), or (iii) of this sub-paragraph a competent analyst has certified that daily naked light certificates are unnecessary or are necessary only to a specified extent, such a daily certificate need not be obtained or, as the case may be, need only be obtained to the specified extent;

- (c) shall be permitted to be applied to the outer surface of, or to be in, any oil-tank on board or in a vessel unless, since oil was last carried in that oil-tank, a naked light certificate has been obtained and is in force in respect of that oil-tank;
- (d) shall be permitted to be applied to the outer surface of, or to be in, any compartment or space adjacent to an oil-tank on board or in a vessel unless, since oil was last carried as cargo in that oil-tank, a naked light certificate has been obtained and is in force in respect of that compartment or space.

(2) Notwithstanding anything in paragraph (1) of this Regulation, heated rivets may be permitted in any place without a naked light certificate being in force in respect of that place if expressly so authorised by a competent analyst who certifies that after adequate and suitable testing he is satisfied otherwise of the atmosphere becoming inflammable, that the place is sufficiently free from inflammable vapour; but such heated rivets shall, where practicable, be passed through tubes.

(3) No person (whether or not a person employed) shall introduce, have or apply a naked light, fire or lamp (other than a safety lamp of a type approved for the purpose of this Regulation) or any heated rivet into, in or to any place where they are prohibited by this Regulation.

(4) In this Regulation the expression “competent analyst” means an analyst who is competent to give a naked light certificate.

### **Entering oil-tanks**

**60.**—(1) No person (other than an analyst entering with a view to issuing a certificate of entry) shall, unless he is wearing a breathing apparatus of a type approved for the purpose of this Regulation, enter or remain in an oil-tank on board or in a vessel unless, since the oil-tank last contained oil, a certificate of entry has been obtained and is in force in respect of the tank.

(2) Without prejudice to paragraph (1) of this Regulation, no person (other than an analyst entering as aforesaid) shall be allowed or required to enter or remain in an oil-tank on board or in a vessel in which oil-tank the oil last carried was oil having a flash point of less than seventy-three degrees Fahrenheit (Abel closed test) unless, since the oil-tank last contained oil, an analyst has certified that the atmosphere is sufficiently free from inflammable mixture.

(3) It shall be the duty of the persons employed to comply with the foregoing provisions of this Regulation.

(4) The provisions of this Regulation are without prejudice to the requirements of Regulations 50 and 51.

### **Duration of certificates**

**61.** Any naked light certificate or certificate of entry may be issued subject to a condition that it shall not remain in force after a time specified in the certificate.

### **Posting of certificates**

**62.** Every employer or shipowner for whom a naked light certificate or a certificate of entry is obtained shall ensure that the certificate or a duplicate thereof is posted as soon as may be and remains posted in a position where it may be conveniently read by all persons concerned.

### **Cleaning of oil-tanks**

**63.**—(1) Subject to the provisions of Regulation 66, before a test for inflammable vapour is carried out with a view to the issue of a naked light certificate for the purposes of Regulation 59 in respect of an oil-tank on board or in a vessel, that oil-tank shall, since oil was last introduced into the tank, be cleaned and ventilated in accordance with paragraph (2) of this Regulation.

(2) The said cleaning and ventilation shall be carried out by the following methods:—

- (a) the oil-tank shall be treated in such manner and for such period as will ensure the vaporisation of all volatile oil;
- (b) all residual oil and any sludge or other deposit in the oil-tank shall be removed therefrom;
- (c) after the oil-tank has been so cleaned—
  - (i) all covers of manholes and other openings therein shall be removed and it shall be thoroughly ventilated by mechanical or other efficient means with a view to the removal of all oil vapour; and then
  - (ii) the interior surfaces, if any deposit remains thereon, shall be washed or scraped down.

### **Invalidation of certificates**

**64.**—(1) If during the course of work in, or to the outer surface of, any part of a tanker or aircraft carrier, any pipe or tank joint is opened or broken or any other event occurs so that there is a risk of oil vapour entering or arising in that part of the tanker or aircraft carrier, that work shall be suspended and thereafter any certificate of entry previously issued in respect of any oil-tank in that part and any naked light certificate previously issued in respect of that part shall be no longer in force.

(2) If (in the case of a vessel other than a tanker or aircraft carrier) during the course of work in any oil-tank or in any compartment or space adjacent thereto, any pipe or tank joint is opened or broken or any other event occurs so that there is a risk of oil vapour entering or arising in the oil-tank or in any compartment or space adjacent thereto, work in the oil-tank and in the compartments and spaces adjacent thereto shall be suspended and thereafter any certificate of entry previously issued in respect of the oil-tank and any naked light certificate previously issued in respect of the oil-tank or any compartment or space adjacent thereto shall be no longer in force.

### **Provisions as to work in other compartments or spaces**

**65.**—(1) Without prejudice to the other provisions of these Regulations, if the presence of oil in such quantity and in such position as to be likely to give rise to fire or explosion is detected in any part of a vessel, being a part to which this Regulation applies and in which repairs of the following kind are to be or are being undertaken, that is to say, repairs involving the use of a naked light, fire or lamp (other than a safety lamp of a type approved for the purpose of Regulation 59) or of a heated rivet, such repairs shall not be started or continued until a naked light certificate has been issued or, as the case may be, reissued in respect of that part of the vessel.

(2) This Regulation shall apply to bilges, shaft tunnels, pump rooms, lamp rooms, and to compartments and spaces other than those to which paragraph (1) (d) of Regulation 59 applies.

### **Exceptions from Regulations 59 and 63**

66.—(1) The provisions of paragraphs (1) (c) and (1) (d) of Regulation 59 as to naked light certificates and the provisions of Regulation 63 as to the cleaning and ventilation of oil-tanks, shall not apply in the case of minor repairs to be carried out—

- (a) to the outer surface of an oil-tank on board or in a vessel; or
- (b) in or to the outer surface of any compartment or space adjacent to any such oil-tank,

in cases where the only oil last carried was oil having a flash point of one hundred and fifty degrees Fahrenheit or above (Pensky-Martens closed test):

Provided that adequate areas of the interior and exterior surfaces of the oil-tank or, as the case may be, of the compartment or space adjacent thereto, in the immediate neighbourhood of the part to be repaired shall be freed from oil or sludge; so, however, that as respects repairs to be carried out to the outer surface of an oil-tank below the level of any oil in that tank only the exterior surface of that oil-tank need be so freed.

In every case to which this paragraph applies appropriate special precautions shall be taken for preventing and extinguishing fire.

(2) The provisions of paragraphs (1) (a) and (1) (b) (iii) of Regulation 59 as to naked light certificates shall not apply in the case of minor repairs involving the application of a naked light to the outer surface only of the hull of a tanker in which the only oil last carried as cargo was liquid methane, liquid propane or liquid butane, being liquid methane, liquid propane or liquid butane at atmospheric pressure, provided that a naked light certificate has previously been obtained on the same day and is in force in respect of the space between the hull and any oil-tank on board, and the space is adequately and continuously ventilated by mechanical means so as to ensure that an inflammable concentration of gas or vapour cannot be formed in it during the period for which the naked light certificate is in force.

(3) The provisions of paragraph (1) (a) of Regulation 59 shall not apply to any part of a tanker where naked lights were allowed when the vessel was in service afloat:

Provided that the said paragraph (1) (a) shall apply whilst any oil-tank in the tanker is open except an oil-tank in respect of which a naked light certificate is in force.

(4) The provisions of paragraph (1) (a) of Regulation 59 shall not apply in the case of tankers in which the only oil last carried was oil used for the purpose of a basin trial or a trial trip.