

**OIL TANKS REGULATIONS**

ARRANGEMENT OF REGULATIONS

**REGULATION**

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**OIL TANKS REGULATIONS**

19/1949.

*\*deemed to be made under section 29*

**1.** (1) These Regulations may be cited as the Oil Tanks Regulations. Citation.

(2) These Regulations shall apply to all oil tanks and gas separators whether they were installed before the date on which these Regulations come into force or after that date.

**2.** In these Regulations—

Interpretation.

“Engineer” means Chief Petroleum Engineer;

“flash point below 150°F.” shall be as determined by the Pensky Martens Closed Cup test. (The standard method of test designated I.P. 34/47 in the eighth edition of the Publication “Standard Methods for testing Petroleum and its Products” published by the Institute of Petroleum);

“gas separator” means any vessel or container used for separating oil from gas, but shall not include bubble towers, dephlegmators or similar refining equipment;

“Manager” means the owner of any oil tank or of any gas separator or some responsible person appointed by the owner to act as his agent;

“oil tank” means any tank or receptacle containing “petroleum in bulk” as defined† in section 2 of the Petroleum Ordinance (now repealed) and/or gas and shall include gas separators; Ch. 26 No. 2. (1950 Ed.).

“process vessel” means any receptacle or container which is an integral part of the equipment or installation used in a refining process and through which crude oil and/or its products circulate.

\* These Regulations were made under section 28 of the Petroleum Ordinance (Ch. 26 No. 2 — 1950 Ed.) (now repealed) and continue in force by virtue of section 29(3) of the Interpretation Act (Ch. 3:01).

† Defined as follows: “petroleum in bulk” means crude petroleum, petroleum or dangerous petroleum in any vessel or receptacle having a capacity of 300 gallons or more.

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Construction of  
oil tanks.

**3.** (1) Oil tanks shall be of sound construction and shall not be constructed of inflammable material except with the permission of the Engineer.

(2) All oil tanks whose contents have a flash point below 150°F and which have a capacity of more than 500 barrels shall be fitted with relief valves of a type approved by the Engineer.

Access to roof  
of oil tank.

**4.** (1) Access to the roof of an oil tank exceeding 12 feet in height or to a walkway giving access to the roof of any such tank shall be by means of a gently sloping stairway placed wherever possible on the side of the prevailing wind. Such stairway and/or walkway shall be provided with substantial guard rails on each side.

(2) The roof of an oil tank exceeding 20 feet in height shall be provided with a substantial metal guard so placed that there will always be a guard between persons carrying out their ordinary duties of dipping or sampling the tank and the nearest perimeter of the tank.

(3) The Engineer may in his discretion grant general or special exemption from or modification of any or all the requirements of this regulation if he is satisfied that owing to equipment supply difficulties or other causes it is not practicable to comply with such requirements. Any such exemption and/or modifications granted shall be for a period not exceeding three years and may be renewable from time to time.

Fires.

**5.** (1) Effective means of extinguishing or controlling fires shall be provided in respect of each oil tank to the satisfaction of the Engineer.

(2) Wherever a fire or explosion occurs in the immediate vicinity of or in any oil tank the Manager shall advise the Engineer within 48 hours and shall forward to the Engineer a report of the circumstances and probable cause of the fire as soon as these have been ascertained.

Work on or in  
an oil tank.

**6.** (1) No person under the age of 18 years shall work on or in an oil tank.

(2) Before any person works, or is permitted to work with a welding apparatus or any other form of fire on a gas or oil line which is in the vicinity of or directly connected to an oil tank, the Manager or a responsible member of his staff shall certify, that it is safe for such work to be commenced.

(3) Before work is undertaken inside any oil tank, the Manager, or a responsible member of his staff appointed by him, shall first take all possible precautions to clear the tank of gas and shall also, whenever he is able to do so, certify the oil tank has been certified as “gas free” and safe.

(4) Unless such oil tank has been certified as gas free and safe, any person who shall enter an oil tank which has been used for the storage of oil and/or gas shall wear a gas mask and shall also wear a life-line, one end of which shall remain outside the tank and be held by another person who must constantly watch the person inside the tank; there shall also be at least two other persons outside the tank in the immediate vicinity to render assistance if required.

7. Save when specially exempted by the Engineer, no gas separator shall be used at any pressure above atmospheric unless—

Use of gas separator.

- (a) it is regularly inspected to ensure that it is in safe condition to work at the required pressure;
- (b) it is fitted with a pressure gauge to show the working pressure of the separator and with a safety valve set to work at a safe margin of pressure: the safety valve shall be tested at intervals not exceeding one month to ensure that it will act at the required pressure;
- (c) all glass liquid gauges are fitted with a cover or guard so as to protect persons present should the glass break unless the gauges are so constructed as to be equally safe to persons present whether so protected or not.

The inspections and tests required under paragraph (a) or (b) of this regulation shall be carried out by the Manager or a



responsible member of his staff appointed by him and the details of such inspections and tests shall be entered in books kept for the purpose and which shall be open to inspection by the Engineer. These books shall comply with the specimen Forms A and B in Appendix "A".

Precautions  
when using  
electricity.

8. (1) When electricity is used proper precautions shall be taken as regards installation, operation, and maintenance to prevent fire or other hazards to the satisfaction of the Engineer.

(2) All conductors, switch gear and apparatus on an oil tank whose contents have a flash point below 150°F shall conform to the Regulations as to the installation and use of electricity made under the Imperial Coal Mines Act, 1911,\* Part I (1 Below Ground) as set out in Appendix "B".

(3) No bare conductors shall be used within 50 feet of any oil tank whose contents have a Flash Point below 150°F and all other apparatus within 100 feet of such tanks shall be so protected that open sparking (as defined in Appendix "B" hereto) is prevented.

Consent of  
Engineer.

9. Without the consent of the Engineer no oil tank whose contents have a Flash Point less than 150°F shall be within 100 feet of—

- (a) a Public Road or State Trace Reserve;
- (b) any building in which fire and/or lights other than enclosed electric lights are used;
- (c) any building used or intended to be used for human habitation;
- (d) any boiler excepting that for oil tanks of a capacity of less than 100 barrels storing oil for use as fuel in such boiler, the above distance of 100 feet may be reduced to 50 feet provided they are placed on the side of the boiler away from the prevailing wind;

\*Repealed and Replaced by the Mines and Quarries Act 1954 (2 & 3 Eliz. 2 c.70) one of the Acts comprised in the Mines and Quarries Acts 1954 to 1971.

- (e) any works, plant or machinery provided that for such works, plant or machinery as utilise firing or fire in any form and/or lights other than enclosed electric lights the above distance of 100 feet shall be increased to 150 feet.

Process vessels are exempted from the provisions of paragraphs (d) and (e) above provided that they and the boiler, works, plant and/or machinery form part of the same installation.

**10.** (1) Smoking, the use of firearms, explosives or naked lights, the ignition of any material or the bringing of any material liable to spontaneous combustion within 100 feet of an oil tank whose contents have a Flash Point below 150°F is prohibited. Prohibitions.

(2) The use of internal combustion engines, stationary or otherwise, within 100 feet of an oil tank whose contents have a Flash Point of less than 150°F is only permitted where every precaution is taken to prevent the escape of fire from such engines.

(3) Exhaust gases from internal combustion engines shall not be released into the atmosphere within 100 feet of any oil tank whose contents have a Flash Point below 150°F provided that this regulation shall not apply to compression ignition engines, engines of automobiles nor to other internal combustion engines, the exhausts of which are fitted with adequate flame-proof attachments.

**11.** (1) Every oil tank with a capacity of more than 500 barrels or group of such tanks whose contents have a Flash Point of less than 150°F shall lie within an enclosure formed by a wall or bank of substantial construction and shall be subject to the following rules: Rules.

- (a) The maximum number of oil tanks permitted to lie inside the same enclosure to be 4—if the capacity of any tank is greater than 40,000 barrels, provided also that the total capacity of the group shall not exceed 600,000 barrels.

- (b) The maximum number of oil tanks permitted to lie inside the same enclosure to be 10—if the capacity of each tank is less than 40,000 barrels and more than 5,000 barrels, provided also that the total capacity of the group shall not exceed 300,000 barrels.
- (c) The maximum number of oil tanks permitted to lie inside the same enclosure to be 20—if the capacity of each tank is not more than 5,000 barrels.
- (d) The minimum distance between any two oil tanks in the same enclosure measured from tank wall to tank wall shall be half the diameter of the larger. The Engineer may, however, give permission for any smaller distance between two tanks provided that such tanks were erected before the coming into force of these Regulations.

(2) The dimensions of the enclosure shall be so sufficient as to be capable of holding—

for 1 tank not less than 100 per cent of the capacity of the tank;

for 2 tanks not less than 70 per cent of the capacity of the tanks;

for 3 or more tanks not less than 60 per cent of the capacity of the tanks.

(3) Subregulations (1) and (2) shall not apply to process vessels or to oil tanks containing gas and/or petroleum products which are in gaseous form at normal temperature and pressure.

Regulations shall be displayed.

**12.** A copy of or extracts from these Regulations shall be displayed in a conspicuous place, where they may be conveniently read, near each oil tank or group of oil tanks; such extracts shall include regulations 5, 6 and 10.

Offence.

**13.** Any person acting in contravention of these Regulations is liable on summary conviction to a fine of one thousand, five

hundred dollars or in the event of a continuing breach to a fine of seven hundred and fifty dollars for each day that such breach continues.

**14.** Nothing in these Regulations shall be construed to affect tanks at petrol filling stations, tanks on vehicles, or drums used for transporting petroleum products or tanks otherwise specially licensed by the Engineer. Construction of Regulations.

## APPENDIX A

### OIL TANKS REGULATIONS

#### FORM A

Regulation 7.

#### INSPECTION OF GAS SEPARATOR

Maker's name and number

Local Number

Name of Owner

Field

Details of Inspection

Date of Inspection	Location of Separator	State condition of separator and what tests were made. Was pressure guage tested	Signature of Inspecting Officer

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Regulation 7.

**FORM B**

**TESTING OF GAS SEPARATOR SAFETY VALVES**

Maker's name and number

Local Number

Name of Owner

Field

Date of Test	Working pressure of Gas Separator pounds per sq. inch	Safety valve lifted at pounds per sq. inch	Signature of testing Officer	Date of Test	Working pressure of Gas Separator pounds per sq. inch	Safety valve lifted at pounds per sq. inch	Signature of testing Officer

## APPENDIX B

### OIL TANKS REGULATIONS

#### GENERAL REGULATIONS AS TO INSTALLATION AND USE OF ELECTRICITY AT OR NEAR OIL TANKS AND GAS SEPARATORS. Regulation 8.

\*NOTE—The following Regulations are taken from the Regulations made under the Coal Mines Act, 1911 of the United Kingdom, Part I (1 below ground), with necessary modifications to meet local conditions. The number in brackets thus (117) are the corresponding numbers in the United Kingdom Regulations.

Words and terms to which specific meanings have been assigned in the definitions are printed in *Italics*.

1. (117) It shall be the duty of every owner, agent or manager to comply with and enforce the following Regulations, and it shall be the duty of all workmen and persons employed to conduct their work in accordance with the Regulations.

2. (118) *Pressure* means the difference of electrical potential between any two conductors or between a conductor and earth as read by a hot wire or electro-static volt-meter.

*Low Pressure* means a *pressure* in a *system* normally not exceeding 250 volts where the electrical energy is *used*.

*Medium Pressure* means a *pressure* in a *system* normally above 250 volts but not exceeding 650 volts, where the electrical energy is *used*.

*High Pressure* means a *pressure* in a *system* normally above 650 volts but not exceeding 3,000 volts, where the electrical energy is *used* or supplied.

*Extra-high Pressure* means a *pressure* in a *system* normally exceeding 3,000 volts, where the electrical energy is *used* or supplied.

\* Repealed and Replaced by the Mines and Quarries Act 1954 (2 & 3 Eliz. 2 c.70) one of the Acts comprised in the Mines and Quarries Acts 1954 to 1971.

*System* means an electrical system in which all the *conductors* and *apparatus* are electrically connected to a common source of electro-motive force.

*Concentric System* means a *system* in which the *circuit* in a *conductor* or *conductors*, called the *inner conductor*, is completed through one or more *conductors* called the *outer conductor*, arranged so that the *inner conductor* is insulated, and the *outer conductor* is disposed over the insulation of, and more or less completely around, the *inner conductor*.

*Conductor* means an electrical *conductor* arranged to be electrically connected to a *system*

*Apparatus* means electrical apparatus, and includes all apparatus, machines, and fittings, in which *conductors* are used, or of which they form a part.

*Circuit* means an electrical circuit forming a *system* or branch of a *system*.

*Covered with insulating material* means adequately covered with insulating material of such quality and thickness that there is no *danger*.

*Metallic Covering* means iron or steel armouring, with or without a lead or other metallic sheath as the conditions of the case may require, or an iron or steel pipe surrounding two or more *conductors*.

*Bare* means *not covered with insulating material*.

*Live* means electrically charged.

*Dead* means at, or about, zero potential, and disconnected from any *live system*.

*Open sparking* means sparking which owing to the lack of adequate provisions for preventing the ignition of inflammable gas external to *apparatus* would ignite such inflammable gas.

*Earthed* means connected to the general mass of earth in such manner as will ensure at all times an immediate discharge of electrical energy without *danger*.

*Earthing system* means an electrical system in which all the *conductors* are *earthed*.

*Switchgear* means switches or fuses, conductors and other *apparatus* in connection therewith, used for the purpose of controlling the current or *pressure* in any system or part of a *system*.

*Danger* means danger to health or danger to life or limb from shock, burn or other injury to persons employed, or from fire or explosion attendant upon the generation, transformation, distribution, or *use* of electrical energy.

*Use* of electricity means the conversion of electricity into mechanical energy, heat or light, for the purpose of providing mechanical energy, heat or light.

3. (123)(c) Adequate working space and means of access clear of obstruction and free from *danger* shall be provided for all *apparatus* that has to be worked or attended to by any person, and all handles intended to be operated shall be conveniently placed for that purpose.
4. (124)(a) All *apparatus* and *conductors* shall be sufficient in size and power for the work they may be called upon to do, and so constructed, installed, protected, worked and maintained as to prevent danger so far as is reasonably practicable.
  - (b) All insulating material shall be chosen with special regard to the circumstances of its proposed use. It shall be of mechanical strength sufficient for its purpose, and so far as is practicable, it shall be of such a character or so protected as fully to maintain its insulating properties under working conditions of temperature and moisture.
  - (c) Every part of a *system* shall be kept efficiently insulated from earth, except that—
    - (i) the neutral point of a polyphase *system* may be *earthed* at one point only;
    - (ii) the mid-voltage point of any *system*, other than a *concentric system*, may be *earthed* at one point only; and



- (iii) the outer *conductor* of a *concentric system* shall be *earthed*.
  - (d) Efficient means shall be provided for indicating any defect in the insulation of a *system*.
5. (125)(a) All metallic sheaths, coverings, handles, jointboxes, switchgear frames, instrument covers, switch and fuse covers and boxes, and all lampholders, unless efficiently protected by an *earthed* or insulating covering made of fire resisting material and the frames and bedplates of generators, transformers, and motors (including portable motors) shall be *earthed*.
- (b) Where the cables are provided with metallic covering constructed and installed in accordance with regulation 9(e), such metallic covering may be used as a means of connection to the *earthing system*. All the conductors of an *earthing system* shall have a conductivity at all parts and at all joints at least equal to 50 per cent of that of the largest *conductor* used solely to supply the apparatus a part of which it is desired to earth. Provided that no *conductor* of an *earthing system* shall have a cross-sectional area of less than .022 of a square inch.
  - (c) All joints in earth *conductors* and all joints to the metallic covering of the cables shall be properly soldered or otherwise efficiently made, and every earth conductor shall be soldered into a lug for each of its terminal connections. No switch, fuse or circuit breaker shall be placed in any earth *conductor*.

This rule shall not apply (except in the case of portable *apparatus*) to any *system* in which the *pressure* does not exceed *low pressure* direct current or 125 volts alternating current.

6. (126)(a) Where electricity is distributed at a *pressure* higher than *medium pressure* —

- (i) it shall not be used without transformation to *medium* or *low pressure* except in fixed machines in which the *high* or *extra high pressure* parts are stationary; and
- (ii) motors under 20 h.p. shall be supplied with current through a transformer stepping down or *medium* or *low pressure*.

(b) Where energy is transformed, suitable provision shall be made to guard against *danger* by reason of the *lower pressure apparatus* becoming accidentally charged above its normal *pressure* by leakage from or contact with the *higher pressure apparatus*.

7. (127) Switchgear and all terminals, cable ends, cable joints, and connections of *apparatus* shall be constructed and installed so that—

- (i) All parts shall be of mechanical strength sufficient to resist rough usage.
- (ii) All *conductors* and contact areas shall be of ample current carrying capacity and all joints in *conductors* shall be properly soldered or otherwise efficiently made.
- (iii) The lodgment of any matter likely to diminish the insulation on or close to *live* parts shall be prevented.
- (iv) All *live* parts shall be so protected or enclosed as to prevent accidental contact by persons and *danger* from arcs or short circuits, fire or water.
- (v) Where there may be risk of igniting gas, or other inflammable material, all parts shall be so protected as to prevent open sparking.

8.(128)(a) Lightning Arresters, properly adjusted and maintained shall be provided where necessary to prevent *danger*.

(b) Efficient means suitably placed, shall be provided for cutting off all *pressure* from every part of a *system* as may be necessary to prevent *danger*.

(c) Such efficient means shall be provided in respect of each separate *circuit* for cutting off all *pressure* automatically from the *circuit* or part or parts of the *circuit* affected in the event of a fault as may be necessary to prevent *danger*.

(d) Every motor shall be controlled by *switchgear* for starting and stopping, so arranged as to cut off all *pressure* from the motor and from all *apparatus* in connection therewith, and so placed as to be easily worked by the person appointed to work the motor.

(e) If a *concentric system* is used no switch, fuse, or circuit breaker shall be placed in the outer *conductor*, or in any *conductor* connected thereto, except that, if required, a reversing switch may be inserted in the outer conductor at the place where the current is being used. Nevertheless, switches, fuses, or circuit breakers may be used to break the connection with the generators or transformers supplying the electricity; provided that the connection of the outer *conductor* with the *earthing system* shall not thereby be broken.

9.(129) All cables, other than the flexible cables for portable apparatus and signalling wires shall comply with the following requirements:

(a) They shall be *covered* with *insulating material* (except that the outer *conductor* of a *concentric system* may be *bare*). The lead sheath of lead sheathed cables and the iron or steel armouring

of armoured cables shall be of not less thickness respectively than is recommended by the Engineering Standards Committee.

- (b) They shall be efficiently protected from mechanical damage and supported at sufficiently frequent intervals and in such a manner as adequately to prevent *danger* and damage to the cables.
- (c) Concentric cables, or two-core or multi-core cables protected by a *metallic covering*, or single-core cables protected by a *metallic covering* which shall contain all the *conductors* of the *circuit*, shall be used—
  - (i) where the *pressure* exceeds *low pressure*; and
  - (ii) where there may be risk of igniting gas or other inflammable material.

Provided that if the *medium pressure* direct current system is used—

- (i) two single-core cables protected by *metallic coverings* may be used for any *circuit* if the said metallic coverings are bonded together by *earth conductors* so placed that the distance between any two consecutive bonds is not greater than 100 feet measured along either cable; and
  - (ii) two single-core cables *covered with insulating material* efficiently protected otherwise than by a *metallic covering* may be used (except where there may be risk of igniting gas or other inflammable material) for purposes of supplying portable *apparatus*.
- (d) Cables unprotected by a *metallic covering* shall be properly secured by some non conducting and readily breakable material to efficient insulators.



(e) The *metallic covering* of every cable shall be—

- (i) electrically continuous throughout;
- (ii) *earthed*, if it is required by regulation 5(a) to be earthed by a connection to the earthing system of not less conductivity than the same length of the said *metallic covering*;
- (iii) efficiently protected against corrosion where necessary;
- (iv) of a conductivity at all parts and at all joints at least equal to 50 per cent of the conductivity of the largest *conductor* enclosed by the said *metallic covering*; and
- (v) where there may be risk of igniting gas or other inflammable material, so constructed as to prevent as far as is practicable any fault or leakage of current from the *live conductors* from causing *open sparking*.

Provided that where two single-core cables protected by *metallic coverings* bonded together in accordance with paragraph (c) of this Regulation are used for a circuit, the conductivity of each of the said *metallic coverings* at all parts and at all joints shall be at least equal to 25 per cent of the conductivity of the *conductor* enclosed thereby.

(f) Cables and *conductors* where joined up to motors, transformers, *switchgear* and other *apparatus*, shall be installed so that—

- (i) they are mechanically protected by securely attaching the *metallic covering* (if any) to the *apparatus*; and
- (ii) the insulating material at each cable end is efficiently sealed so as to prevent the diminution of its insulating properties. Where necessary to prevent abrasion or to secure gas tightness there shall be properly constructed bushes.

10. (130)(a) Flexible cables, for portable *apparatus* shall be two-core or multi-core and *covered with insulating material* which shall be efficiently protected from mechanical damage. If a flexible *metallic covering* be used either as to the outer conductor of a *concentric system* or as a means of protection from mechanical damage the same shall not alone be used to form an earth conductor for the portable *apparatus*.
- (b) Every flexible cable for portable *apparatus* shall be connected to the *system* and to the portable *apparatus* itself by a properly constructed connector.
- (c) At every point where flexible cables are joined to main cables a switch capable of entirely cutting off the *pressure* from the flexible cables shall be provided.
- (d) No lampholder shall be in metallic connection with the guard or other metal work of a portable lamp.
11. (131)(a) Should there be a fault in any *circuit* the part affected shall be made *dead* without delay, and shall remain so until the fault has been remedied.
- (b) All *apparatus* shall be kept clear of obstruction and free from dust, dirt, and moisture as may be necessary to prevent *danger*.
- Inflammable or explosive material shall not be stored in any rooms, compartment or box containing *apparatus* or in the vicinity of *apparatus*.
- (c) Adequate precautions shall be taken by *earthing* or other suitable means to discharge electrically any *conductor* or *apparatus*, or any adjacent *apparatus*, if there is *danger* therefrom, before it is handled, and to prevent any *conductor* or

*apparatus* from being accidentally or inadvertently electrically charged when persons are working thereon. While lamps are being changed the *pressure* shall be cut off.

Provided that this paragraph shall not apply to the cleaning of commutators and slip rings working at *low* or *medium pressure*.

- (d) Every flexible cable shall be examined periodically and if found damaged or defective it shall forthwith be replaced by a spare cable in good and substantial repair. Such damaged or defective cable shall not be further used until after it has been properly repaired.

**12. (132)** In any place where inflammable gas, although not normally present, is likely to occur in quantity sufficient to be indicative of *danger* the following additional requirements shall be observed:

- (i) All cables and *apparatus* signalling wires and signalling instruments shall be constructed, installed, protected, worked and maintained so that in the normal working thereof there shall be no risk of *open sparking*.
- (ii) All motors shall be constructed so that when any part is *live* all rubbing contacts (such as commutators and slip-rings) are so arranged or enclosed as to prevent *open sparking*.
- (iii) The pressure shall be switched off *apparatus* forthwith if *open sparking* occurs, and during the whole time that examination or adjustment disclosing parts liable to *open sparking* is being made. The pressure shall not be switched on again until the *apparatus* has been examined and the defect (if any) has been remedied or the adjustment made.

- (iv) Every electric lamp shall be enclosed in an air-tight fitting, and the lamp globe itself shall be hermetically sealed.

**13.** Any of the requirements of these Regulations shall not apply in any case in which exemption is obtained from the Engineer on the ground either of emergency or special circumstances, on such conditions as the Engineer may prescribe.