

*Shutting off and Withdrawal of Water.*

281. In every well, subterranean water shall be isolated by casing to prevent it from penetrating into the oil stratum. No casing shall be removed without written authority from the Inspector. After each permeable bed is penetrated the water therefrom shall be immediately isolated, and the method of such isolating shall be shown on the working sections. After subterranean water is isolated, if water is introduced into the borehole under pressure the well-operators of adjoining wells shall have power to decide the amount of water so introduced, and after water is shut off they shall have power to determine the eventual loss of water by the use of a water-flush drilling system.

282. If the watering of a borehole is reported to the Inspector such Inspector shall as soon as possible make an inspection and give the necessary orders for dealing with the matter, or, if he deems necessary, the abandonment of the well, and the person or persons to whom such orders shall have been given shall carry the same into effect.

283. At any producing well where water is not completely isolated it shall be continuously withdrawn in order that the oil-bearing stratum shall not be flooded. If this is neglected the Inspector, at the request of the operator of the adjoining well, may order the withdrawal of the water or of the inadequate plugging at the unisolated well; and if such order is not carried out during the succeeding fortnight the Inspector may have the water or water-tight plugging withdrawn at the cost of the operator who was ordered to do it.

284. It shall be the duty of the owner or manager of every well, after water has been shut off, to notify the Inspector of the steps taken to effect the shut-off.

*Log of Well.*

285. It shall be the duty of every owner or operator of an oil-well to keep a careful and accurate log of the drilling of such well, which shall show the character and depth of the formations or strata passed through or encountered in such well, the thickness, depth, and character of water-, gas-, or oil-bearing strata, the depths at which such strata are sealed off, and the methods adopted to effect the shut-off of water, gas, or oil, as the case may be; also the lengths, kinds, and sizes of casing used in the well, and the methods of seating each separate casing string.

The log shall be kept in such form as is approved by the Minister, and a copy of same shall be forwarded to the Under-Secretary for Mines at the end of every calendar month.

*Abandonment of a Well.*

286. (a.) The well-operator, when he purposes to abandon any well, shall send a written notice of his intention to the Inspector, and the work of plugging the hole or pulling the casing shall not proceed until the Inspector shall be present to see that the said plugging is done as prescribed by these regulations, except as hereinafter provided.

(b.) In case the Inspector fails to be present within ten days from receipt of notice, then the work may proceed, provided that two men who have had at least three years' experience in the plugging of wells are present and make statutory declarations in duplicate that the work was done in accordance with the provisions of these regulations. Such statutory declarations shall be filed with the Inspector, and put on record in his office.

(c.) If the well was drilled prior to these regulations coming into operation, the well-operator shall send to the Inspector with the notice of abandonment a description, together with a plan and section, showing the position of the well.

(d.) Every well upon abandonment shall be plugged and filled solidly and tightly from the bottom to the top as follows: The hole shall be filled with rock-sediment, sand, clay, or other suitable material from the bottom of the well to a hard and firm stratum below the last string of casing set in above the producing oil or gas sands. If an Inspector declares that it is impracticable to fill the cavity in the lowest producing sand, then he shall permit the well-operator to place plugs at the top of the lowest producing sand, and to fill as hereafter described.

(e.) In the firm, hard stratum three seasoned wood plugs of a diameter equal to the diameter of the hole, and each of a length of at least 3 ft., shall be driven into place. Above the third plug 10 ft. of clay shall be placed and thoroughly tamped down so as to prevent the passage of oil, gas, or water.

(f.) Immediately below the seat of each and every string of casing there shall be driven a seasoned wood plug as described, and all spaces between wood plugs shall be filled solidly and tightly with rock-sediment, clay, sand, or other suitable material as the casing is withdrawn length by length. All plugs shall be driven in place with proper drilling-tools.

(g.) The locations of the plugs herein prescribed are designated with reference to the relative positions of the gas and oil sands, for the purpose of preventing the passage of water into the oil and gas sands; and if any well presents a variation in such relative positions of the said strata

such additional wood plugs as the Inspector may deem necessary shall be driven into place by the well-operator.

(h.) When the work of plugging and filling from bottom to top shall have been completed the well-manager shall make a report in duplicate to the Inspector, on forms to be furnished by the Inspector, showing the date of completion of the well, the names of and the depths to all productive oil or gas measures, the total depth of the well, and the location and kind of all plugs and filling used, and the method followed in placing the same.

(i.) If the Inspector was not present at the aforesaid plugging and filling operations, the report thereon shall also be certified to by two men who have had at least three years' experience in the plugging of wells.

287. Upon the abandonment of any well the owner or manager thereof shall furnish to the Under-Secretary for Mines, upon a form to be supplied for the purpose, a complete log or record of the well and a full description of the plugging.

*Installation and Use of Electricity.*

288. The installation and use of electric light or power plants in the proclaimed petroleum district shall be in conformity with the Regulations for the Installation of Electricity under the Mining Act applicable to well operations. In addition to which the following regulations shall also be observed, but should the first-named regulations conflict with them the following regulations shall supercede:—

- (a.) All apparatus and conductors shall be of sufficient size and power for the work for which they may be required, so constructed, installed, protected, used, and maintained as to prevent danger as far as is reasonably practicable.
- (b.) All conductors and contact areas shall be of ample current-carrying capacity, and all parts shall be so protected as to prevent open sparking.
- (c.) All signalling-wires and signalling-instruments shall be constructed, protected, and worked so that in the normal use thereof there shall be no risk of open sparking.
- (d.) Adequate appliances, suitably placed, shall be provided for cutting off all pressure from every part of the system, as may be necessary to prevent danger.
- (e.) Adequate provision shall be made for cutting off all pressure automatically from the part or parts of the system affected in the event of a fault or leakage of current.
- (f.) All insulating-material shall be chosen with special regard to the circumstances of its proposed use. It shall be of adequate strength 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 when used in inflammable gas, high temperature, and excessive moisture.
- (g.) Adequate means shall be provided for immediately indicating any defect in the insulation of a system.
- (h.) The insulating-material of each cable-end shall be efficiently sealed as to prevent diminution of its insulating properties, and when necessary to secure gastightness there shall be properly constructed bushes.
- (i.) Generators, rotary converters, accumulators, or other equipment for supplying the current shall not be erected within a distance of at least 150 ft. from any well, tank, or gasometer.
- (j.) Transformers may be erected within the limits of the preceding paragraph, but not inside the derrick or adjacent buildings.
- (k.) The voltage of supply for lighting purposes shall not exceed 110 volts.
- (l.) When oil-gas commences to rise from any well, or from the time of shutting off the water with hermetic casing, only electric filament lamps shall be used in lighting the derricks and the adjacent buildings. Every electric lamp shall be enclosed in an airtight fitting with a substantial protecting iron basket, and the lamp-globe itself shall be hermetically sealed. Switches shall on no account be placed near to a lamp in the prohibited area.
- (m.) No oil-lamp shall be permitted for the lighting of derricks, or buildings adjacent thereto, unless authorized in writing by the Inspector. Such lamps shall be in special weather-proof boxes, placed outside the derrick or building, and protected by a strong and tight-fitting glass. The burner of the lamp shall be so arranged that the light may be extinguished without opening the box.
- (n.) The use of any electric hand safety-lamp shall not be permitted until the type of lamp has been approved by the Inspector.
- (o.) The use of electric filament lamps connected to sockets with flexible conductors is prohibited. Arc lamps shall not be used within a distance of at least 150 ft.