



Rules of
Department of Natural Resources
Division 50—Oil and Gas Council
Chapter 2—Oil and Gas Drilling and Production

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**Title 10—DEPARTMENT OF
NATURAL RESOURCES
Division 50—Oil and Gas Council
Chapter 2—Oil and Gas Drilling
and Production**

10 CSR 50-2.010 Organization Report

PURPOSE: This rule provides for the filing of information that identifies those responsible for oil and gas exploration, producing or related industry activities regulated by the council. The organization report is required in order to properly process bonding, well permitting, producing, plugging and other council regulated activities and to make sure that the person making application is, in fact, authorized to represent a person, firm or corporation.

(1) Prior to start of operations, each person, firm or corporation engaged in oil or gas drilling, producing or transporting or engaging in projects developed for underground storage of hydrocarbons in natural formation or developed for disposal of water, nonusable gas or other waste accompanying the production of oil or gas, shall properly execute the prescribed organization report (form OGC-1) and submit same to the state geologist. Signatures as required on this form must be notarized. The report must be filed before bonding will be approved.

(2) After any change occurs as to facts stated in the report as submitted and filed, except change of ownership, a supplementary report shall be filed with the state geologist with respect to the change within thirty (30) days after the effective date of change.

(3) Upon change of ownership of any well(s), producing or nonproducing, notice shall be given to the state geologist within ten (10) days after the change of ownership.

AUTHORITY: section 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Sept. 10, 1979, effective Feb. 1, 1980.*

**Original authority: 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.020 Bonds

PURPOSE: Bonding is required of an operator before commencing oil or gas drilling or operations to insure compliance with the provisions of the rules of the council, specifically with reference to the proper plugging for abandonment of a well(s).

(1) Prior to commencement of oil or gas drilling or operations, the person, firm or corporation commencing drilling or operations shall make, or cause to be made, and file with the state geologist a good and sufficient bond for each well or hole and payable to the state of Missouri, conditioned for the performance of the duty to comply with all the provisions of the laws of the state of Missouri and the rules and orders of the Oil and Gas Council. This bond shall remain in force and effect until plugging of the well or hole is approved by the state geologist and is released by the state geologist, or a new bond is filed by a successor in interest and is released by the state geologist. Application for release of bond shall be made by letter to the state geologist who shall release the bond if the requirements of the law and regulations have been met. Bond will be required in the following amounts during the entire operation of the well:

SINGLE WELL BOND

Depth of Well		Amount
From	To	
0'	500'	\$1000
501'	1000'	\$2000
1001'	2000'	\$3000
2001'	5000'	\$4000
5001'	—	\$5000
		plus \$1/ foot beyond 5001 feet

Refer to 10 CSR 50-2.070(1)(G) for non-commercial gas well bond amounts.

BLANKET WELL BOND

Depth of Well			Number of Unplugged Wells/bond
From	To	Amount	
0'	800'	\$20,000	50 wells
801'	1200'	\$30,000	15 wells

(A) However, the blanket bond amount may be increased by the single well bond amount (which varies depending on the depth of the well—see Single Well Bond table) for every unplugged well in excess of the maximum allowable unplugged wells per blanket bond as shown in the Blanket Well Bond table.

(B) All wells permitted prior to the effective date of this regulation shall comply with these bonding requirements no later than January 1, 1990. All wells permitted on or after the effective date of this regulation shall comply with the previously mentioned bonding requirements prior to permit issuance.

(2) The bond shall be by a corporate surety authorized to do business in the state of Missouri and shall be submitted on form OGC-2. In lieu of a bond with a surety, an applicant may furnish to the council his/her own personal bond, secured by a certificate of deposit in an amount equal to that of the required surety bond. The personal bond shall be submitted on form OGC-2A. When the bond is filed, the state geologist shall immediately review the bond and if the bond is in proper form, the state geologist shall approve the bond with the conditions which may be required by the council or by rule. No drilling or operation shall commence or continue unless there is on file a bond approved by the state geologist.

(3) Personal bonds shall be subjected to the following conditions:

(A) The institution issuing the certificate of deposit must be insured by the Federal Deposit Insurance Corporation (FDIC) or the Federal Savings and Loan Insurance Corporation (FSLIC);

(B) Only automatically renewable certificates of deposit will be accepted; and

(C) Any interest on the certificates of deposit shall be made payable to the permittee.

AUTHORITY: section 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Sept. 10, 1979, effective Feb. 1, 1980. Amended: Filed Sept. 13, 1983, effective Dec. 11, 1983. Amended: Filed May 18, 1987, effective July 24, 1987. Amended: Filed Dec. 20, 1988, effective May 25, 1989.*

**Original authority: 259.070, RSMo 1965, amended 1972, 1983, 1987.*

10 CSR 50-2.030 Application for Permit to Drill, Deepen, Plug-Back or Inject

PURPOSE: This rule provides for information needed for the permitting of drilling of new wells or reworking existing wells and establishes procedures for the determination of their locations (distances from property lines, other producing wells, etc.), according to classifications of the well(s). It also establishes procedures to be followed by the state geologist in issuing or denying permits and legal recourse available to an applicant in case of denial. The rule further provides for the revocation of permits by the council after



a hearing in the event that state laws or council rules have been violated, or if fraud, misrepresentation, etc., were used to initially obtain a permit.

(1) Prior to commencement of operations, application for a permit must be made with the state geologist on form OGC-3 or OGC-3-I (for injection wells) as prescribed by the council. An organization report (form OGC-1) and bond (form OGC-2) must be on file in the office of the state geologist or must accompany the application.

(2) An accurate well location survey must accompany the application. The plat shall show the distance from the two (2) nearest section lines to the well. The plat of survey shall show the distance of the well from the nearest lease line and from the nearest producing, drilling or abandoned well on the same lease. The geographic coordinates of the well shall be shown along with the method used to obtain the coordinates and statement of positional accuracy of the coordinates. The plat of survey shall be prepared by a Missouri professional land surveyor and shall meet the current "Minimum Standard Requirements for Property Boundary Surveys" defined in 10 CSR 30-2.010. Form OGC-4 or OGC-4-I, for injection wells, (see section (3)) must accompany the application. A confirmation well and/or additional development wells may be exempted from a minimum standards survey at the discretion of the council. A well location map, as here and after described, may be substituted in lieu of the previously mentioned plat of survey. The applicant shall provide a well location map and well reference sketch or the geographic position of the well prepared according to the specifications in 10 CSR 50-2.030(2)(A). The well location map shall be drawn to a scale of one inch (1") equals one hundred feet (100'), one inch (1") equals two hundred feet (200') or one inch (1") equals four hundred feet (400'). A copy of the current ownership map maintained by the county tax assessor shall be acceptable. The quarter-quarter section, governmental lot, or United States Survey, along with the governmental section, township and range shall be stated on the well location map. The location map shall show the approximate location of the well within the section or quarter section, the approximate distance to the nearest perceived lease line or perceived boundary line and the names of the owners of the property on which the well is located and all adjoining property owners. The well reference sketch shall show the location of the well and its relationship (bearing and distance preferred), where pos-

sible, to four (4) durable objects to provide a permanent location of the well. Durable objects include, but are not restricted to, house corners (fully describe), marks on concrete structures or pavement, marks on ledge or bedrock, trees and set monuments. The reference sketch shall show the approximate distance of the well from existing streets or perceived boundary lines shown on the location map. It shall also show the house number of any houses shown on the sketch along with all street names. Both the location map and the reference sketch shall show a north arrow and a scale. Form OGC-4 or OGC-4-I, for injection wells, (see section (3)) must accompany the application.

(A) A well location map conforming to the scale and distance requirements specified in 10 CSR 50-2.030(2) along with the geographic position of the well may be used in lieu of a well reference sketch. The geographic coordinates shall be latitude and longitude based on the North American Datum of 1983 (NAD 83) and resolved, at a minimum, to the nearest one-tenth (.10) of a second: i.e., latitude 38° 42' 54.2" North, longitude 90° 37' 15.8" West. The coordinates shall have a minimum positional tolerance of three (3) meters. Any well that a minimum standards survey reveals not to meet the minimum distance requirements shall not be approved for completion or production.

(3) Upon application for an injection well, an accurate location plat (form OGC-4-I) must accompany the application. The plat shall be drawn neatly and to scale and shall show the distance of the well from the nearest lease line and from the two (2) nearest section lines to the well. If the well is drilled on acreage that has been pooled with other land, distance to nearest boundary of the pooled acreage must also be shown. The plat shall also show the area of review for the applicant well and all area of review wells of public record that penetrate the injection interval. Descriptions, of the area of review wells, that penetrate the injection interval shall be included on the back of the form OGC-4-I. These descriptions shall include lease name, well number, location, owner, depth, type (oil, gas, etc.), date spudded, date completed and construction of the wells. Each area of review well shall be uniquely marked or numbered.

(4) A neat, accurate schematic diagram of the applicant injection well(s) and relevant surface equipment shall be submitted on form OGC-11 before application will be processed. This schematic diagram shall include the following: configuration of well head; total depth and/or plug-back total depth;

depth of all injection or disposal intervals and their formation names; lithology of all formations penetrated; depths of the tops and bottoms of all casing and tubing; size and grade of all casing and tubing; type and depth of packer; depth, location and type of all cement; depth of all perforations and squeeze jobs; and geologic name and depth to bottom of all underground sources of drinking water which may be affected by the injection.

(5) The applicant for an injection well(s) shall publish a notice of application in a newspaper of general circulation in the county in which the proposed injection well(s) will be located. The applicant shall submit a copy of the newspaper notice to the state geologist before the public hearing or administrative approval is granted. The notice shall include the name and address of applicant, location of proposed well(s), geologic name and depth of injection zone, a description of the need for the injection well(s) and the address of the office of the state geologist, where additional information may be obtained. There shall be a fifteen (15)-day written comment period (comments to be sent to the office of the state geologist). If within this period the state geologist determines that a significant degree of public interest is expressed, or other factors indicate the need for a public hearing, the state geologist may order a hearing. Public notice will be provided with a hearing date set for no sooner than thirty (30) days after the date of notice. If no public hearing is ordered, the application will be processed without further delay. A record will be kept of all written comments received and the responses to these comments.

(6) Upon application, the state geologist may waive the initial requirement for a minimum standards survey for noncommercial gas wells (wells drilled for the sole purpose of furnishing gas for private consumption by the owner and not for resale or trade). A permit application (OGC-3) shall include form which enables the state geologist to determine if minimum distance requirements to property or lease boundaries can be met before issuing a permit for drilling. If gas supplies are found to be present in sufficient quantities to be utilized, a minimum standards survey and plat of survey or a location map showing the geographic coordinates as described in 10 CSR 50-2.030(2)(A) and conforming to the scale, distance and format requirements specified in 10 CSR 50-2.030(2) of this rule will then be required to ensure compliance with distance requirements before any production can be



initiated. Any well, that a minimum standards survey reveals not to meet minimum distance requirements shall not be approved for completion or production of gas.

(7) An owner engaged in drilling development wells to depths no greater than eight hundred feet (800') may request that the state geologist approve prospective well locations on a blanket basis on a single lease. The request shall be accompanied by a plat of the entire lease, indicating the location of and identifying by number all wells which have been drilled or are proposed, using appropriate symbols to distinguish between them; the plat shall conform to the scale and distance requirements specified in section (2) of this rule. In the event the state geologist approves the blanket requests, the approved locations may be drilled in the owner's order of preference, provided that a permit application (OGC-3) for each well commenced shall be sent to the state geologist within twenty-four (24) hours after the commencement of drilling of each well.

(8) An owner, company, firm or corporation engaged in drilling small diameter (less than five inch (5")) drill holes and core holes for stratigraphic purposes and which will not be used for the actual recovery of hydrocarbons, upon written request to the state geologist, may be granted permission to file individual well permit applications (OGC-3) and location plats (OGC-4) not later than three (3) days after the well has been drilled, and further may obtain a waiver of spacing requirements in 10 CSR 50-2.070, provided that—

(A) An organization report (OGC-1) has been properly executed and approved according to 10 CSR 50-2.010;

(B) Bonding has been executed and approved according to 10 CSR 50-2.020; and

(C) All other requirements in regard to drilling, plugging and abandonment are met.

(9) Upon application for a permit the state geologist shall review the application and, within fifteen (15) days, determine if the application is in proper form and if the requirements of the law and the rules are met. If the state geologist finds that the application is in good form and that the laws are being met s/he shall issue the permit. If s/he determines that either the application is not in proper form or that the law of the rules are not being met s/he shall deny the permit. If the state geologist finds that the drilling of a well at the proposed site would be an undue risk to the surface or subsurface environment, s/he shall deny the permit. If the state geologist determines that prior wells drilled

by the operator have been abandoned and have not been plugged in an approved manner, s/he shall deny the permit.

(A) Upon denial of a permit, the applicant may appeal within thirty (30) days of the notice of the denial to the state council and a hearing shall be held as provided by law.

(B) After the hearing the council shall either issue the permit or deny the permit. If the council denies the permit an appeal may be taken to the circuit court as provided by law.

(10) Permits may be revoked by the council upon a finding after a hearing as provided by law that any provision of the law, rules or conditions of the permit have been violated or that any fraud, deceit or misrepresentation was made to obtain the approval of the permit. Appeals of any decision of the council may be taken as provided by law.

(11) Permits are not transferable to any other person, firm or corporation or to any other location.

(12) Unless operations to drill a single well are commenced within one hundred eighty (180) days after date of approval, the approval to drill will become null and void.

(13) Before commencing drilling operations, a drilling contractor engaged by an owner or operator for the drilling of a well shall confirm that an approved drilling permit has been obtained by the owner or operator. The drilling contractor's confirmation shall consist of the placement of his/her signature and date of signature, in ink, on the owner's approved permit. A drilling contractor shall not commence drilling operations unless an approved permit to drill the well has been obtained by the owner or operator and confirmed by the drilling contractor's signature.

(14) Prior to any substantial change or modification of the physical characteristics or method of operation of any well subject to these regulations, or change in the nature of wastes disposed of therein, the owner or operator of the facility shall submit a revised application form to the state geologist, identifying the well name, location, the proposed change and a full explanation of the nature of the change, to the state geologist. No modification or change in operation shall be commenced until the state geologist has reviewed and approved the written notification. The state geologist shall have a minimum of fifteen (15) days to respond to the notification and the fifteen (15)-day review period shall be suspended if additional information is necessary to effectively review the information.

The term "substantial change or modification" shall mean any change in operation which may affect an underground source of drinking water, or otherwise alter the operation of the well so that its operation is not consistent with the existing permit.

AUTHORITY: sections 259.060, 259.070, 259.080 and 259.140, RSMo 2000. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Dec. 12, 1975, effective Dec. 22, 1975. Amended: Filed Sept. 12, 1978, effective Feb. 1, 1979. Amended: Filed Oct. 14, 1981, effective Feb. 11, 1982. Amended: Filed Dec. 15, 1986, effective April 11, 1987. Amended: Filed Sept. 15, 2006, effective April 30, 2007.*

**Original authority: 259.060, RSMo 1965, amended 1972; 259.070, RSMo 1965, amended 1972, 1983, 1987, 1993, 1995; 259.080, RSMo 1965, amended 1972; and 259.140, RSMo 1965.*

10 CSR 50-2.040 Drilling and Completion

PURPOSE: One of the important functions of the council is to prevent produced salt water from contaminating either surface or underground fresh water resources. When an oil or gas well is drilled, the bit usually penetrates fresh water strata at relatively shallow depths. This groundwater is commonly the only source of water for irrigation or for animal and human consumption. This rule provides procedures for protecting all fresh water and for acceptable safety standards for wells and surface installations so that the wild and uncontrolled flow of gusher wells or blowouts can be prevented. Plugging of wells when they are abandoned is consistent with a statewide effort to prevent contamination of water resources and would also be important should a given area prove to be productive as in secondary recovery activity.

(1) During the drilling of any well, surface casing will be set at the depth indicated on form OGC-3 or form OGC-3-I which has been approved by the state geologist and will be cemented from the setting depth to the surface. Before the bottom plug is drilled or before tests are initiated, the surface casing will stand cemented for the following periods of time: neat cement, for twenty-four (24) hours; neat cement with one percent (1%) CaCl₂, for twelve (12) hours; neat cement with two percent (2%) CaCl₂, for ten (10) hours; neat cement with three percent (3%) CaCl₂, for eight (8) hours; and neat cement with four percent (4%) CaCl₂, for six (6) hours. If other additives are to be used in the cement, the operator must contact the staff of



the office of the state geologist for setting times appropriate for that particular cement.

(2) All wells drilled for oil, gas or injection shall be completed with a string(s) of casing which shall be properly cemented at sufficient depths to protect all water, oil or gas bearing strata and shall prevent their contents from passing into other strata. In the event wells are drilled with cable tools, temporary protective casing strings may be left uncemented. The specific casing and cementing requirements for injection wells shall be based on the depth to the base of the underground source of drinking water, the nature of the injected fluids and the hydraulic relationship between the injection zone and the base of the underground source of drinking water.

(3) In certain instances, 10 CSR 50-2.040(3) shall modify 10 CSR 50-2.040(1) as follows: In wells drilled to producing formations at a depth of no greater than eight hundred feet (800'), the state geologist may approve owner's request to set a single casing string and to cement the string by placing sufficient cement to fill annular space no less than approximately forty feet (40') above the top of the producing horizon.

(4) During drilling and following completion of wells, surface well and producing installations shall conform to accepted safety standards.

(5) Whenever operations shall cease for a period of ninety (90) days on any well, the owner or operator of the well shall give notice to the council and, if the council shall deem it necessary to prevent the pollution of any fresh water strata or supply, shall cause the well to be temporarily plugged in accordance with the rules of the council and under its direction. If the operations on any well are not recommenced within a period of six (6) months after notice has been given, the well shall be deemed a permanently abandoned well and the owner or operator shall comply with the rules relating to the plugging and abandonment of wells. Provided, that upon application to the council prior to the expiration of the six (6)-month period and for good cause shown, the council may extend the period for an additional six (6) months and in like manner the council may grant additional six (6) month extensions, but the total time of such consecutive extensions shall not exceed two (2) years, unless a mechanical integrity test is performed as outlined in 10 CSR 50-2.040(6) and the well capped at the surface, before the end of the two (2)-year extension period. The council may then permit the well to remain inactive status for a maximum of

five (5) years and if not returned to active status within this time the well must be plugged.

(6) All new or newly converted injection wells shall be required to demonstrate mechanical integrity as defined by 10 CSR 50-1.030(1)(O) before operation may begin. All wells not permanently plugged and abandoned must demonstrate mechanical integrity at least every five (5) years for the absence of significant leaks from the outermost casing and the absence of significant fluid movement in vertical channels adjacent to the well bore. Demonstration of the absence of significant leaks shall utilize at least one (1) of the following procedures: A pressure test with liquid or gas, monitoring of annulus pressure in wells injecting at a positive pressure following an initial pressure test or any other test(s) that the state geologist considers effective. Demonstration of the absence of significant fluid movement in vertical channels adjacent to the well bore shall utilize at least two (2) of the following procedures: Cementing records (reviewed only once for the life of the well), tracer surveys, noise logs, temperature surveys or any other test(s) that the state geologist considers effective.

(7) A maximum injection pressure for injection wells shall be established by the state geologist so that the pressure in the injection zone during injection does not initiate new fractures or propagate existing fractures in the confining zone. The injection pressure also should not cause the injected fluid to migrate into an underground source of drinking water.

(8) All logs and other test data shall be sent to the state geologist before operation may begin. The state geologist shall inform the operator of a satisfactory or unsatisfactory demonstration of mechanical integrity by mail or telephone without delay.

(9) In order to insure that all existing injection wells are properly tested for mechanical integrity as required by federal regulation, at least one-fifth (1/5) of each operator's injection wells drilled in Missouri prior to the State Underground Injection Control Program must demonstrate mechanical integrity as defined in 10 CSR 50-2.040(6) each year for the first five (5) years of the program. All injection wells, including new wells and newly converted wells must demonstrate mechanical integrity every five (5) years.

(10) If a well cannot demonstrate mechanical integrity the operator must cease operation of the well and immediately inform the state geologist. If corrective action cannot restore

mechanical integrity within thirty (30) days after notification, the operator shall again notify the state geologist, who may grant an additional thirty (30) days before ordering the well to be plugged.

(11) The state geologist or an authorized representative shall have the authority to sample injected fluids at any time during injection operations.

(12) The operator is required to provide a one-fourth inch (1/4") female fitting, with cut-off valve, to the tubing to all wells drilled and completed as injection wells after the State Underground Injection Control Program is promulgated, so the injection pressure being used can be monitored by an authorized representative(s) of the state geologist. For wells that were injecting prior to promulgation of the State Underground Injection Control Program, the female fitting need not be added until the well is tested for mechanical integrity.

AUTHORITY: sections 259.060 and 259.070, RSMo 2000. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Oct. 14, 1981, effective Feb. 11, 1982. Amended: Filed Aug. 11, 1986, effective Oct. 27, 1986.*

**Original authority: 259.060, RSMo 1965, amended 1972 and 259.070, RSMo 1965, amended 1972, 1983.*

10 CSR 50-2.050 Samples, Logs and Completion Reports

PURPOSE: The objective of exploration is to locate reserves of oil and gas. To obtain this objective, the geologic history and the relationships of petroleum generation, migration and accumulation must be understood. Analyses of well cuttings and cores provide much information on the composition, age and original environment of deposition of the sediments and on fluid content and characteristics. Logging tools lowered into boreholes furnish information concerning the electrical, acoustical and radioactive properties of rock-fluid systems throughout drilled intervals. This rule provides for filing of these data with the Oil and Gas Council for the future use of industry and government scientists and is of paramount importance in achieving new energy resources and for protection of the environment



(1) Sample cuttings shall be taken at ten foot (10') intervals from the surface to total depth in all wells drilled for oil or gas, for geological information, for the storage of dry natural gas, or casinghead gas and for the development of reservoirs for the storage of liquid petroleum gas. Each sample shall be carefully identified as to well name and depth of sample and all samples shall be shipped at the owner's expense to the office of the state geologist. Samples shall be remitted to the state geologist at weekly intervals and shall be for his/her study and use and shall be considered confidential for a period of one (1) year when so requested by the owner in writing.

(2) During the drilling of, or immediately following the completion of, any well drilled as provided in section 10 CSR 50-2.050(1) of this rule the owner shall advise the state geologist of all intervals that are to be cored, or have been cored, and the cores as are taken shall be preserved, and if requested shall be forwarded to the state geologist at the owner's expense. In the event that it is necessary for the owner to utilize all or any portion of the core to the extent that sufficiently large and representative samples are not available for the state, the owner shall furnish the state geologist with the results of identification or testing procedures. The data shall be considered confidential for a period of one (1) year when so requested by the owner in writing.

(3) Within thirty (30) days of the completion of a well drilled for oil or gas, for geologic information, for gas storage, for the development of reservoirs for storage of liquid petroleum gas or for any injection purposes the owner will file with the state geologist properly executed form OGC-5. As an integral part of form OGC-5, the owner shall include complete logs or records of the well, including drilling time logs, electric logs, radioactive logs or other logs that may have been obtained during mechanical integrity testing. When more than one (1) type has been made, all shall be required. The data shall be filed with the state geologist for his/her study and use and shall be considered confidential for a period of one (1) year when so requested by the owner in writing.

(4) The state geologist may waive the requirements of sampling as set forth in section (1) of this rule when a well(s) is/are drilled in an established field. The state geologist will advise the owners on the returned copy of the drilling application when samples will not be required.

*AUTHORITY: section 259.070, RSMo 1986. *Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Oct. 14, 1981, effective Feb. 11, 1982.*

**Original authority: 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.060 Plugging and Abandonment

PURPOSE: This rule provides for the protection of both surface water and groundwater. Drilling muds, oil and water recovered from drilling or testing operations must be disposed of so that pollution of surface soil, ponds and streams is avoided. Fresh water strata are protected by casing set below the deepest zone that might contain fresh water. Dry holes must be plugged and abandoned in a manner that subsurface salt water or mineralized water will be confined to the stratum in which it occurs. Similarly, each oil or gas stratum penetrated by a well must be permanently sealed when abandoned to prevent contamination of fresh water supplies and also to prevent damage by water of any oil or gas stratum capable of producing in paying quantities. In certain logging procedures, a radioactive source (in a probe or sonde) is lowered into the borehole to provide certain subsurface data useful in exploration for oil and gas. Should this radioactive source contained in a logging tool be lost, certain procedures are prescribed to prevent the accidental or intentional mechanical disintegration of the radioactive source. Further, there are provisions for marking the well site permanently as a warning that a radioactive source has been abandoned in the well.

(1) Before beginning abandonment work on any well whether it is a drilling well, or a well drilled for oil or gas, for geologic information, or for gas storage, or for any other purpose, notice of intention to abandon the well shall be filed with the state geologist on approved form OGC-6. The notice shall include the details of the proposed abandonment procedure and whether any logging tool containing a radioactive source is being abandoned (see section (8) of this rule for radioactive source abandonment procedure). If necessary to avoid rig downtime, oral permission to abandon dry holes may be obtained by informing the state geologist of proposed abandonment procedures.

(2) In lieu of prior notice and approval by the state geologist (form OGC-6) the operator may elect to plug the hole from total depth to within plow depth of the surface with cement

slurry, being no less than sixteen (16) pounds per gallon density. In such event, form OGC-7 shall be forwarded to the state geologist within forty-eight (48) hours after completion.

(3) Before any well is abandoned, it shall be plugged in a manner which will confine permanently all oil, gas and water in the separate strata originally containing them. The plugging operation shall be accomplished by the proper use of mud-laden fluid, cement and plugs, used singly or in combination as may be approved by the state geologist.

(4) Drill holes in formations which contain oil or gas or from which oil or gas have been produced, or that have been used for injection, shall be plugged by placing cement from the base of the formation to a point no less than twenty-five feet (25') above the top of the formation.

(5) Appropriate means shall be taken to eliminate movement of surface water into a plugged well and to prevent pollution of subsurface strata.

(6) Casing shall be cut off below plow depth except as may be approved by the state geologist to allow for the conversion of a well to a water supply well for use by a landowner. A well conversion agreement (form OGC-8) is available for use by the operator and landowner in these instances.

(7) Within thirty (30) days after the completion of abandonment, the prescribed plugging record, form OGC-7, shall be executed and submitted to the state geologist.

(8) Before a radioactive source may be abandoned, the person, firm or corporation proposing the abandonment shall notify the state geologist. Wells in which radioactive sources are being abandoned should be mechanically equipped so as to prevent the accidental or intentional mechanical disintegration of the radioactive source.

(A) Sources being abandoned in a well should be covered with no less than a fifty feet (50') standard-color-dyed cement plug on top of which a whipstock should be set. The dye is to alert the re-entry operator prior to encountering the source.

(B) In wells where a logging source has been cemented in place behind a casing string and above total depth, upon abandonment a standard-color-dyed cement plug should be placed opposite the abandoned source and to extend fifty feet (50') above and fifty feet (50') below with a whipstock placed on top of the plug.



(C) In the event the operator finds that after expending a reasonable effort, because of hole conditions, it is not possible to abandon the source as prescribed in subsections (8)(A) or (B) of this rule, s/he shall seek the state geologist's approval to cease efforts in this direction and obtain approval for an alternate abandonment procedure.

(9) Upon permanent abandonment of any well in which a radioactive source is left in the hole, and after removal of the wellhead, a permanent plaque is to be attached to the top of the casing left in the hole in a manner that re-entry cannot be accomplished without disturbing the plaque. This plaque would serve as a visual warning to any person re-entering the hole that a radioactive source has been abandoned in place in the well. The plaque should contain the trefoil radiation symbol with a radioactive warning and should be constructed of a long-lasting material such as monel, stainless steel or brass.

(10) Monies deposited in the Oil and Gas Remedial Fund may be used by the council to plug those oil, gas and injection wells that have been abandoned and have not been plugged according to the council's rules, subject to the following guidelines:

(A) Wells covered by a forfeited bond shall receive first priority; and

(B) Other wells shall receive secondary priority on the basis of their potential for groundwater contamination or other damage in the order recommended to the council by the state geologist.

AUTHORITY: section 259.060, 259.070 and 259.190, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Dec. 12, 1975, effective Dec. 22, 1975. Amended: Filed Sept. 10, 1979, effective Feb. 11, 1980. Amended: Filed Oct. 14, 1981, effective Feb. 1, 1982. Amended: Filed Sept. 13, 1983, effective Dec. 11, 1983.*

**Original authority: 259.060, RSMo 1965, amended 1972; 259.070, RSMo 1965, amended 1972, 1983; and 259.190, RSMo 1965, amended 1983.*

10 CSR 50-2.070 Well Spacing

PURPOSE: In the early history of oil drilling and production, a landowner or lessee could drill as many wells on his/her land as s/he desired and as close to the lease boundaries as possible. S/he could also produce oil as rapidly as possible from each well to prevent loss of the oil to his/her neighbors. This

resulted in many unnecessary wells being drilled and premature depletion of oil pools. As more knowledge of reservoir behavior and the mobility of reservoir fluids increased, spacing of wells on a wider, uniform pattern became a standard practice. Optimum spacing is considered to be the maximum number of reservoir acres that can be economically and effectively drained by one well within a reasonable time. Stated differently, if one well can be drilled economically on forty acres and this is the area that can be drained effectively, then the spacing or acreage attributable to the well should not be less than forty acres. The word effective implies that a well so spaced will ultimately recover as much oil for the forty acres as would be recovered by more than one well. This rule provides requirements for, and limitations on, the spacing of wells and for certain exceptions and exemptions thereto.

(1) In the absence of an order by the council setting spacing units for a pool, the following regulations shall apply:

(A) For the purpose of interpreting distance requirements of this rule, any hole drilled on a lease shall be considered a well until properly abandoned;

(B) Oil Wells.

1. Not more than one (1) well drilled for oil shall be drilled upon any tract of land other than a governmental quarter section or governmental lot corresponding thereto, or, in areas not covered by United States Public Land Surveys, an arbitrarily designated forty (40)-acre tract. The well shall not be located closer than approximately five hundred feet (500') to any boundary line of a governmental quarter section, governmental lot corresponding thereto, or arbitrarily designated forty (40)-acre tract, nor closer than approximately one thousand feet (1000') to the nearest well drilling to or capable of producing from the same pool on the same lease or unit. Should the governmental quarter section, governmental lot, or arbitrarily designated tract contain less than thirty-six (36) acres, no well shall be drilled thereon except by special order of the council; and

2. Wells whose oil-producing formations may be reasonably expected to be less than one thousand two hundred feet (1200') in depth may be excepted from the forty (40)-acre spacing requirement at the discretion of the council. Any well so excepted shall not be drilled closer than approximately one hundred sixty-five feet (165') to lease, boundary or property line;

(C) Gas Wells.

1. Not more than one (1) well shall be drilled for gas upon any tract of land other

than a governmental section or, in areas not covered by United States Public Land Surveys an arbitrarily designated six hundred forty (640)-acre tract. The wells shall not be located closer than the approximately two thousand two hundred feet (2200') to any boundary line of a governmental section or arbitrarily designated six hundred forty (640)-acre tract, nor closer than approximately four thousand five hundred feet (4500') to the nearest well drilling to or capable of producing from the same pool on the same lease or unit. Should the governmental section or arbitrarily designated tract contain less than six hundred (600) acres, no well shall be drilled thereon except by special order of the council; and

2. Wells whose gas-producing formations may be reasonably expected to be less than one thousand five hundred feet (1500') in depth may be excepted from the six hundred forty (640)-acre spacing requirement at the discretion of the council. No well shall be drilled closer than approximately two hundred thirty-four feet (234') from lease, boundary or property line;

(D) Spacing and lease-line requirements may be waived, upon application to the state geologist, to protect against offset drainage in the event offset wells were drilled prior to the enactment of chapter 259, RSMo;

(E) Project Development. Spacing requirements may be waived, at the discretion of the council, for all wells required in research or development projects leading to initiation or improvement of methods for the economic recovery of oil or gas by primary, secondary or tertiary processes (see 10 CSR 50-2.110 for procedure);

(F) Wells drilled expressly for operation of underground gas storage projects are exempt from spacing requirements. No well shall be drilled closer than approximately three hundred thirty feet (330') to a lease line without written authorization of the state geologist; and

(G) Noncommercial gas wells may be exempted from the spacing requirements of paragraph (1)(C)1. of this rule, after approval by the state geologist, where the following procedures and conditions are met:

1. In areas where no previous spacing patterns have been established, an owner having acquired drilling rights may apply for the establishment of a drilling unit containing no less than three (3) acres, consisting of one (1) or more contiguous separately owned tracts, on which a well no deeper than eight hundred feet (800') in depth may be drilled without regard to section lines or property lines; provided that any well so permitted shall not be drilled closer than one hundred sixty-five feet



(165') from the boundary of the drilling unit or a closer distance as is allowed under subsection (1)(D) of this rule;

2. An applicant for an exemption and establishment of a drilling unit under this subsection shall file a plat or well location map (see 10 CSR 50-2.030(2)) outlining the area which will be affected by the proposed well, and showing the location of the separate tracts along with the names and addresses of the mineral and surface owners of record, as well as names and addresses of lessees of any tracts leased for oil and gas. All wells, including dry, abandoned, producing or drilling wells on the proposed unit, and any well location for which drilling permits have been approved, shall be accurately located and designated on the plat. The applicant shall also file proof that s/he has the right to take gas from beneath all land in the proposed unit; and

3. Spacing exemptions may be granted for good cause upon application to the council; and

4. A well drilled under the terms of this provision shall be subject to all other applicable provisions of the rules of the Oil and Gas Council, except that the bonding amount shall be the greater of one dollar and fifty cents (\$1.50) per well foot or three hundred dollars (\$300).

AUTHORITY: sections 259.060, 259.070 and 259.100, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Sept. 12, 1978, effective Feb. 1, 1979. Amended: Filed Dec. 15, 1986, effective April 11, 1987. Amended: Filed May 18, 1987, effective July 24, 1987.*

**Original authority: 259.060, RSMo 1965, amended 1972; 259.070, RSMo 1965 amended 1972, 1983, 1987; and 259.1000, RSMo 1965, amended 1987.*

10 CSR 50-2.080 Monthly Reports

PURPOSE: A history of the production of an oil or gas well is important in the evaluation of a particular well, lease or pool. Reservoir characteristics, fluid behavior and production can be used for studies and estimates of production on future pools. Use of production data and reservoir analyses included on monthly reports can be correlated with recovery techniques to promote conservation and to prevent waste in the oil industry. This rule provides for the filing of monthly status, production and water disposal reports, with certain waivers.

(1) Monthly well status and production report, approved form OGC-9, shall be prepared in full and submitted to the state geologist no later than thirty (30) days after the end of each calendar month. The status of each well on a lease is requested on a monthly basis. Production data may be presented by each lease unless requested otherwise by the council.

(2) Monthly report of injected fluids, approved form OGC-10, shall be prepared in full and submitted to the state geologist no later than thirty (30) days after the end of each calendar month. The method of disposal of all fluids produced from oil wells, gas wells, or enhanced recovery operations must be clearly stated. Water produced from underground gas storage reservoirs that is disposed of by injection is included.

(3) In the event monthly data requested by form OGC-9 are available on another format as a result of machine printout, the form may be accepted in lieu of form OGC-9, provided a written request, accompanied by a sample printout, has been submitted to the state geologist for his/her approval.

(4) Monthly well status and production reports may be waived by the state geologist upon application in the event that gas production by an owner is for his/her sole and private use.

(5) If mechanical failure of an injection well should occur or if other conditions should develop that threaten or could threaten to contaminate an aquifer, the operator or an authorized representative shall notify the state geologist as soon as possible by telephone and letter. The letter shall be complete and accurate and shall contain the operator's estimate of the nature of the problem(s).

(6) The operator shall be required to monitor the injection pressure and injection rate on each injection well at least on a monthly basis, with the results reported annually on form OGC-12, to the state geologist.

(7) All monitoring reports will be on file at the office of the state geologist and will be retained and available for at least five (5) years.

AUTHORITY: sections 259.060 and 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Dec. 12, 1975, effective Dec. 22, 1975. Amended: Filed Oct. 14, 1981, effective Feb. 11, 1982.*

**Original authority: 259.060, RSMo 1965, amended 1972 and 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.090 Disposal of Fluids by Injection

PURPOSE: In some phases of the producing life of some reservoirs, large quantities of salt water may be produced along with the oil and gas. Adequate protection of fresh water supplies lies in the proper disposal of this salt water. Rather than allowing the salt water to flow onto the land surface and into streams and rivers, a more satisfactory method of disposal is the injection of this water into permeable subsurface formations that do not contain fresh water. This rule provides that details such as quality and quantity of the water and well construction are to be submitted to the state geologist for approval to insure that potable water supplies are adequately protected.

Before produced fluid may be disposed of by injection into subsurface strata, pertinent data concerning details of the proposed operation, forms OGC-3-I, OGC-4-I and OGC-11 and any other information required shall be submitted to and approved by the state geologist before injection may begin.

AUTHORITY: section 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973. Amended: Filed Oct. 14, 1981, effective Feb. 11, 1982.*

**Original authority: 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.100 Fluid Injection Projects

PURPOSE: Water flooding, a type of secondary recovery, utilizes water, including produced salt water by injecting this water into a depleted or nearly depleted oil reservoir to flush out a secondary crop of oil. In many cases, where the oil is difficult to flush with water, certain chemicals are often added to increase the efficiency of water as an oil-recovery agent. This practice helps maintain reservoir pressure and increases the ultimate amount of oil that can be obtained from a particular reservoir, thereby preventing the waste of natural resources. This rule provides for the protection of groundwater by requiring approval of the state geologist concerning pertinent details of the project and the submission of monthly reports to the state geologist. Also the correlation rights of the owners are protected by the prior approval of well



spacing and lease line requirements by the state geologist.

(1) Fluid injection projects, not otherwise classified as research or development projects by the council, may be approved as units within themselves. Unit approval may be requested by submitting to the state geologist a project report specifying all pertinent details of the proposed project.

(2) Fluid injection projects shall be governed by well-spacing and lease-line requirements under 10 CSR 50-2.070.

(3) Monthly reports shall be submitted in accordance with 10 CSR 50-2.080. Additional monthly operating reports may be requested in the future by written order of the council.

AUTHORITY: sections 259.060 and 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973.*

**Original authority: 259.060, RSMo 1965, amended 1972 and 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.110 Special Projects and Research Projects

PURPOSE: The oil reserves of the state or nation at any one time consist of that fraction of discovered oil that can be economically recovered using existing technology. Since optimum recovery is dependent upon engineering and scientific achievements as well as economics, any development of new processes represents an increase in oil reserves as well as an improvement in oil conservation practices. By carefully matching recovery processes to individual reservoirs, it should be possible to greatly extend the potential that exists in the so-called heavy oil deposits of western Missouri. This rule permits the council to give special consideration to development of potential resources such as these.

(1) It is the purpose of the council to encourage development of economic recovery of oil and gas reserves in the state, in particular the research and development leading to economic recovery of so-called heavy oil reserves by primary, secondary and tertiary recovery methods. Research or special projects whose object is to devise and develop methods may be approved as units complete within themselves. Unit approval may be obtained, at the discretion of the council, by submitting to the state geologist a project report specifying all

pertinent details of the proposed project. It is the stated policy of the council to permit to the owner a great measure of latitude in the spacing of producing wells, injection wells, observation wells or other wells required for the orderly development and evaluation of the projects. Blanket project approval for drilling the wells may be granted at the discretion of the state geologist, provided the location and numbers of the wells are anticipated with a reasonable degree of accuracy.

(2) No well drilled for the purpose of producing oil or gas shall be drilled closer than approximately one hundred sixty-five feet (165') to a lease line.

(3) Reports of the pertinent details of overall project operation shall be submitted quarterly to the state geologist for his/her study and use and shall be considered as confidential for no less than two (2) years, upon written request by the operator.

AUTHORITY: sections 259.060 and 259.070, RSMo 1986. Original rule filed Oct. 11, 1966, effective Oct. 21, 1966. Amended: Filed Sept. 12, 1973, effective Sept. 22, 1973.*

**Original authority: 259.060, RSMo 1965, amended 1972 and 259.070, RSMo 1965, amended 1972.*

10 CSR 50-2.120 Gas Storage Operations

PURPOSE: The development of gas storage operations requires that they be addressed by the state. This will ensure protection of the state's underground sources of drinking water.

(1) Gas storage operations that inject gas that is liquid at standard temperature and pressure shall comply to all rules pertaining to injection wells.

AUTHORITY: Chapter 259, RSMo 1986. Original rule filed Oct. 14, 1981, effective Feb. 11, 1982.*

**Original authority: Chapter 259, see Missouri Revised Statutes.*