

Kansas Administrative Regulations

Kansas Corporation Commission

Article 3.—Production and Conservation of Oil and Gas

82-3-1003. Fully authorized operating permits and operating requirements for existing and new underground porosity gas storage facilities and underground porosity gas storage wells; penalties.

(a) Application and permit required. No underground porosity gas storage facility or gas storage well shall be put into operation and no underground porosity gas storage facility or gas storage well in existence before July 1, 2002 shall continue to operate after its provisional permit has expired, unless the following conditions are met:

(1) The operator has filed an application for a fully authorized underground porosity gas storage facility operating permit with the conservation division in accordance with subsection (b), and the operator has constructed or is operating the storage facility in compliance with provisions of this regulation.

(2) Each application for a fully authorized operating permit for an underground porosity gas storage facility to be constructed after July 1, 2002 also complies with K.A.R. 82-3-1004.

(3) The operator has received from the conservation division a written permit granting the application for full authorization.

(b) Application form; content. The original and two copies of each application for full authorization shall be signed and verified by the operator, filed with the conservation division on a form furnished by the commission, and provide the following information:

(1) The name of the underground porosity gas storage facility and, if applicable, the permit number of the provisional permit for which the operator is requesting full authorization;

(2) the name, description, and average depth of the gas storage porosity reservoir or reservoirs being utilized for underground porosity gas storage;

(3) a geologic and hydrogeologic evaluation of the gas storage porosity reservoir or reservoirs and the surrounding formations. The evaluation shall include any available

geophysical data and assessments of any regional tectonic activity, regional or local fault zones, and structural or stratigraphic anomalies. The evaluation shall focus on the gas storage porosity reservoir or reservoirs and adjacent confining layers. The evaluation shall also identify any oil and gas horizons known to be productive in the area of the storage facility and any freshwater-bearing horizons known to be developed in the area of the storage facility. The evaluation shall include exhibits and plan view maps showing the following:

- (A) All water, oil, and gas exploration and development wells, and other man-made surface structures and activities within one mile outside of the storage facility boundary;
- (B) any regional or local faulting;
- (C) an isopach map of the gas storage reservoir or reservoirs;
- (D) an isopach map of the adjacent confining layer;
- (E) a structure map of the top and base of the storage reservoir or reservoirs;
- (F) identification of all structural spill points or stratigraphic anomalies controlling the isolation of stored hydrocarbon gases or associated fluids; and
- (G) structural and stratigraphic cross-sections that describe the geologic conditions at the underground porosity gas storage facility.

The geologic and hydrogeologic evaluation required under this paragraph shall be certified by a licensed geologist or licensed engineer. The operator of an underground porosity gas storage facility may submit existing geologic and hydrogeologic studies or evaluations in fulfillment of the requirement of this paragraph if those studies have been updated to reflect current storage facility conditions at the time of the application and have been certified as such by a licensed geologist or licensed engineer;

- (4) an area of review evaluation, which shall include a review of the data of public record for wells that penetrate that part of the underground porosity reservoir designated as the gas storage porosity reservoir, and those wells that penetrate the underground porosity gas storage reservoir within one-fourth mile of the boundary of the underground porosity gas storage facility. This review shall determine if all abandoned wells have been plugged in a manner that prevents the movement of gas or associated fluids from the underground porosity gas storage reservoir. The area evaluation required under this paragraph shall be certified by a licensed geologist or licensed

engineer. The applicant shall identify any wells that appear from the review of public records to be unplugged or improperly plugged, and any other unplugged or improperly plugged wells of which the applicant has actual knowledge;

(5) the calculated maximum storage volume for the underground porosity gas storage reservoir or reservoirs using a method acceptable to and filed with the conservation division. Storage volume calculations shall include working gas and cushion gas volumes. Any refinement of actual underground porosity gas storage reservoir volumes determined after continued operation of the facility shall be filed with the conservation division. Storage volume calculations filed according to this paragraph shall be certified by a licensed engineer or licensed geologist;

(6) a report of the maximum operating pressures to be utilized at the underground porosity gas storage facility. The maximum allowed storage reservoir pressure, measured in psig, shall be no greater than 75 percent of the fracture gradient of the formation as determined by a step rate test or as calculated by a licensed engineer or licensed geologist using a method acceptable to the conservation division. The underground porosity gas storage reservoir shall not be subjected to operating pressures in excess of the calculated fracture pressure even for short periods of time. Higher operating pressures may be allowed by the conservation division upon written application by the operator. The application, if approved by the conservation division, shall be subject to any conditions established by the conservation division;

(7) the results of multiple water quality tests of fluid recovered from the gas storage porosity reservoir or reservoirs reporting the amount of chlorides and total dissolved solids for the fluid in milligrams per liter. This test shall be conducted by a laboratory that is certified by the state of Kansas. No porosity gas storage shall be permitted in porous strata with chloride levels less than 5,000 milligrams per liter;

(8) a schedule of completed and pending mechanical integrity testing for all gas storage wells utilized at the storage facility. All existing gas storage injection and withdrawal wells and gas storage withdrawal wells shall demonstrate mechanical integrity according to K.A.R. 82-3-1005 before July 1, 2004. All existing gas storage observation wells shall demonstrate mechanical integrity according to K.A.R. 82-3-1005 on or before July 1, 2007. Pressure testing or alternative tests or surveys conducted in

accordance with K.A.R. 82-3-1005 and performed after July 1, 1999 shall be deemed to have demonstrated mechanical integrity on the date of the test or survey. All gas storage wells completed after July 1, 2002 shall demonstrate mechanical integrity according to K.A.R. 82-3-1005 before being placed into service as an active gas storage well;

(9) a current site map showing the boundaries of the underground porosity gas storage facility, the location and well number of all gas storage wells, including any observation wells, the location of cathodic protection boreholes or ground bed systems, and the location of all pertinent surface facilities within the boundary of the storage facility. This site map shall be verified by the operator;

(10) a statement confirming that the applicant holds the necessary and sufficient property rights for construction and operation of the underground porosity gas storage facility;

(11) a detailed description of the storage facility's current safety plan;

(12) the applicant's license number;

(13) any other information that the conservation division requires; and

(14) payment of the application fee required by K.A.R. 82-3-1012.

(c) Safety plan required. Each operator shall develop and implement a storage facility safety plan. This plan shall include emergency response procedures and provisions to provide security against unauthorized activity. The plan shall detail the safety procedures concerning the residential, commercial, and public land use in the proximity of the storage facility. The emergency response procedures shall include contingency plans for gas storage well leaks and loss of containment from gas storage wells or the gas storage reservoir. The emergency response procedures shall also identify specific contractors and equipment vendors capable of providing necessary services and equipment to respond to such gas storage well leaks or loss of containment from gas storage wells or the gas storage porosity reservoir. The plan shall be updated as changes in safety features at the facility occur, or as the conservation division requires. Copies of the plan shall be available at the storage facility and at the nearest operational office of the operator of the storage facility.

(d) Safety systems required. Leak detectors shall be placed at all gas storage wells located within 330 feet of an inhabited residence, commercial establishment, church, school, small, well-defined outside area, or enclosed compressor site. Leak detectors, where applicable, shall be integrated with automated warning systems. Inspection and testing of these leak detectors shall comply with requirements of K.A.R. 82-3-1005. Identification signs shall be required at each gas storage well and shall comply with signage requirements specified in K.A.R. 82-3-1007.

(e) Well casing and cementing requirements.

(1) Gas storage wells in existence on July 1, 2002 shall comply with appropriate provisions of casing and cementing requirements as outlined in K.A.R. 82-3-104, K.A.R. 82-3-105, and K.A.R. 82-3-106. However, any intermediate or production casing strings or liners that are set in the wellbore shall be cemented with a sufficient volume of cement to fill the annular space to a point 500 feet above the top of the storage reservoir or to the surface, whichever is less.

(2) Gas storage wells completed after July 1, 2002 and completed with a tubing and packer configuration shall comply with appropriate provisions of casing and cementing requirements as outlined in K.A.R. 82-3-104, K.A.R. 82-3-105, and K.A.R. 82-3-106, except as outlined below:

(A) Any intermediate or production casing strings or liners that are set in the wellbore shall be cemented with a sufficient volume of cement to fill the annular space to a point 500 feet above the top of the storage reservoir or to the surface, whichever is less.

(B) All surface, intermediate, and production casings shall meet the standards specified in either of the following documents, both of which are hereby adopted by reference:

(i) "Bulletin on performance properties of casing, tubing, and drill pipe," API bulletin 5C2, as published by the American petroleum institute in October 1999; or

(ii) "specification for casing and tubing (U.S. customary units)," API specification 5CT, as published by the American petroleum institute in October 1998.

All surface, intermediate, and production casings shall be new casing or reconditioned casing of equivalent quality that has been pressure-tested in accordance with the requirements of paragraph (e)(2)(B). For new pipe, the pressure test conducted

at the manufacturing mill or fabrication plant may be used to fulfill the requirements of paragraph (e)(2)(B).

(C) Emplacement of cement in the setting of the intermediate casing string, production casing string, or any liners shall be verified by a cement bond log, cement evaluation log, or any other evaluation method approved by the conservation division.

(D) (i) All tubing strings shall meet the standards contained in either of the documents adopted in paragraph (e)(2)(B) of this regulation. All tubing shall be new tubing or reconditioned tubing of equivalent quality that has been pressure-tested. For new tubing, the pressure test conducted at the manufacturing mill or fabrication plant may be used to fulfill this requirement.

(ii) For tubing completions, the packer shall be set at a depth at which the packer will be opposite a cemented interval of the long string casing and shall be set no more than 50 feet above the uppermost perforation or open hole for the gas storage reservoir.

(3) Each gas storage well completed after July 1, 2002 and not completed with a tubing and packer configuration shall be permitted only upon a showing of good cause. Each well shall, at a minimum, comply with appropriate provisions of casing and cementing requirements as outlined in K.A.R. 82-3-104, K.A.R. 82-3-105, and K.A.R. 82-3-106, except as outlined below:

(A) Any intermediate or production casing strings or liners that are set in the wellbore shall be cemented with a sufficient volume of cement to fill the annular space to the surface. The proposed cementing plan shall be approved by the conservation division in advance of drilling and cementing operations.

(B) All surface, intermediate, and production casings shall meet the standards contained in either of the documents adopted in paragraph (e)(2)(B) of this regulation.

All surface, intermediate, and production casings shall be new casing or reconditioned casing of equivalent quality that has been pressure-tested. For new pipe, the pressure test conducted at the manufacturing mill or fabrication plant may be used to fulfill this requirement. The proposed casing plan shall be approved by the conservation division in advance of drilling and completion operations.

(C) Emplacement of cement in the setting of the intermediate casing string, production casing string, or any liners shall be verified by a cement bond log, cement evaluation log, or any other evaluation methods approved by the conservation division.

(D) Gas injection or withdrawal wells located within 330 feet of an inhabited residence, commercial establishment, church, school, or small, well-defined outside area shall be equipped with down-hole safety shutoff valves.

(f) Wellhead valves, connections, and flow line requirements. All wellhead components, including the casinghead and tubing head, valves, and fittings, shall be made of steel having operating pressure ratings sufficient to exceed the maximum injection pressures computed at the wellhead. These ratings shall be clearly identified on valves and fittings. The wellhead master valve on each gas storage well shall be fully opening and shall be sized to the diameter of the casing or tubing string to which the valve is attached. Each flow line connected to the wellhead shall be equipped with a manually operated positive shutoff valve located on the wellhead.

(g) Gas metering; required. The total volume of gas injected into and withdrawn from an underground porosity gas storage facility operating under a fully authorized gas storage permit issued by the conservation division shall be metered according to the requirements of K.A.R. 82-3-1006.

(h) Gas volume; reporting. The operator of an underground porosity gas storage facility operating under a fully authorized gas storage permit issued by the conservation division shall report monthly to the conservation division the volume of gas placed into storage and the volume of gas removed from storage at the facility during the preceding month. The report shall be filed according to K.A.R. 82-3-1006.

(i) Gas leaks; reporting. The operator of an underground porosity gas storage facility operating under a fully authorized gas storage permit issued by the conservation division shall report any pressure changes or other monitoring data that indicate the presence of leaks in a gas storage well or the lack of confinement of the injected gases and any associated fluids to the gas storage reservoir. The report shall be filed according to K.A.R. 82-3-1006.

(j) Modification, suspension, or cancellation of permit. A fully authorized operating permit may be modified, suspended, or canceled after notice and opportunity for

hearing if a material change in conditions has occurred in the operation of the gas storage facility or if there are material deviations from the information originally furnished to the conservation division that affect the safe operation of the facility or the ability of the facility to operate without causing the waste of hydrocarbons, pollution, or a threat to public safety. All underground porosity gas storage facility operations shall cease upon suspension or cancellation of a permit under this subsection.

(k)(1) Application required to amend permit; fully authorized permit amendment. The operator of a storage facility operating under a fully authorized operating permit shall file an application with the conservation division on a form furnished by the conservation division for an amendment to that permit under any of the following:

(A) At any time that a material change in conditions has occurred in the operation of the gas storage facility or in the ability of the facility to operate without causing pollution or the waste of hydrocarbons;

(B) before expanding the areal extent of the underground porosity gas storage facility;

(C) before increasing the underground porosity gas storage reservoir pressure above the maximum permitted pressure;

(D) before adding any additional gas storage well within the underground porosity gas storage facility, if the well will be located 1,320 feet or less from the boundary of the storage facility; or

(E) before adding any additional gas storage well within the underground porosity gas storage facility, if the well will be located more than 1,320 feet from the boundary of the storage facility.

(2)(A) The applicant for any amendments under paragraphs (k)(1)(A) through (D) of this regulation shall publish notice of the application in at least two issues of the official county newspaper of each county in which the lands affected by the application are located. In addition, notice of the application shall also be published in at least one issue of the Wichita Eagle newspaper. The applicant shall also deliver or publish any notice that the applicant deems necessary to insure that those persons whose rights may be affected by the application have been sufficiently notified in accordance with applicable due process requirements.

(B) The application shall be held in abeyance for 15 days from the date of the last publication or delivery of notice, whichever is later. If during that 15-day period a valid protest is filed according to K.A.R. 82-3-135b or if the commission on its own motion deems that there should be a hearing on the application, a hearing shall be held. The applicant shall publish notice of the hearing in the same manner as that required by paragraph (k)(2)(A) above.

(C) If an application for an amendment is administratively denied, the operator shall have a right to a hearing upon written request.

(l) Penalties.

(1) Operating an underground porosity gas storage facility in violation of this regulation shall be punishable by a penalty of \$1,000, and the underground porosity gas storage facility may be shut down until compliance is achieved.

(2) Each day that the violation continues may be considered a separate violation. The penalties specified in this subsection may be increased by the commission if it finds that aggravating factors exist.

This regulation shall be effective on and after October 29, 2002.

(Authorized by and implementing K.S.A. 55-152, K.S.A. 2001 Supp. 55-162, 55-164, 55-1,115, and 74-623; effective, T-82-6-27-02, July 1, 2002; effective Oct. 29, 2002.)

***** Authenticated Kansas Administrative Regulation *****