STATE OIL AND GAS BOARD OF ALABAMA
GOVERNING CLASS II UNDERGROUND INJECTION CONTROL OPERATIONS
ADMINISTRATIVE CODE

CHAPTER 400-4-2
CLASS II UNDERGROUND INJECTION CONTROL OPERATIONS

TABLE OF CONTENTS

400-4-2-.01 Underground Injection Control.

All Class II injection wells must be permitted and operated in accordance with the following requirements.

(1) **Definitions.** In addition to the definitions set forth in Rules 400-1-1-.05, 400-2-1-.05, and 400-3-1-.05, whichever is applicable, unless the context otherwise requires, the following words shall have the meanings indicated when used within this rule.

(a) **Class II injection well** shall mean an injection well which is used (1) to inject brine or other fluids which are brought to the surface in connection with natural gas storage operations or oil or natural gas production and which may be commingled with waste waters from gas plants which are an integral part of production operations, unless those waters are classified as a hazardous waste at the time of injection; (2) for enhanced recovery of oil or natural gas; or (3) for storage of hydrocarbons which are liquid at standard temperature and pressure.

(b) **Fluid** shall mean a material or substance which flows or moves whether in a semi-solid, liquid, sludge, gaseous or any other form or state.

(c) **Hazardous waste** shall mean a hazardous waste as defined by Section 22-30-3(5) of the Code of Ala. 1975.

(d) **Injection** shall mean the introduction of fluids into a subsurface stratum or formation.

(e) **Underground injection control** shall mean control of the underground injection of fluids.

(f) **Underground source of drinking water (USDW)**

1. Shall mean an aquifer or its portion:

(i) Which supplies any public water system; or

(ii) Which contains a sufficient quantity of ground water to supply a public water system; and

I. Currently supplies drinking water for human consumption; or

II. Contains fewer than 10,000 mg/l total dissolved solids; and

2. Shall mean an aquifer or its portion which is not an exempted aquifer.

(2) **Injection of Fluids.** Fluids injected into a Class II injection well shall be stored, transported, and injected in such a manner as may be approved by the Supervisor. Any such injection procedure that results or may result in the pollution of any USDW or in damage to oil, gas, or other minerals is prohibited.

(a) Immediately following the initiation of production in any field or pool, all salt water shall be disposed of into an approved underground formation or otherwise disposed of as approved by the Supervisor where such salt water cannot damage or pollute any USDW, oil, gas, or other minerals.

(b) Injection wells may be drilled for the purpose of Class II operations or existing wells may be converted to injection wells for this purpose. Class II injection wells shall be completed in a manner that will insure injection into zones approved by the Supervisor. A well drilled for Class II operations shall have surface casing or first intermediate casing set at least one hundred (100) feet below the base of the deepest USDW described in section (2)(c). Such casing strings shall meet the requirements of Rules 400-1-3-.11, 400-2-3-.11, or 400-3-3-.11, whichever is applicable.

(c) Wells drilled or converted for injection purposes shall be cased and cemented to prevent the loss of injected fluids into any zone not approved by the Supervisor. All Class II injection wells shall be completed with a long string of casing that shall be properly cemented at a sufficient depth to adequately protect the hydrocarbon-bearing stratum and any USDW. Casing shall be cemented in place with a calculated volume of cement sufficient to fill the annular space at least five hundred (500) feet above the top of the injection interval.

(d) An operator shall give notice to the Supervisor prior to pressure testing. After primary cementing of the long string of casing, drilling shall not resume until a time lapse of twelve (12) hours under pressure. Cement is considered under pressure when one or more float valves are employed and are shown to be holding the cement in place or when other means of holding pressure are used. After cementing and prior to drilling the plug, the long string of casing shall be pressure tested at a pressure in pounds per square inch (psi) calculated by multiplying the depth of the midpoint of the injection interval by two-tenths (2/10) or any other pressure required by the Board or Supervisor. All pressure tests are to be held for thirty (30) minutes and the maximum test pressure required shall not exceed fifteen hundred (1,500) psi. If during this test period the pressure declines more than ten percent (10%) of the initial test pressure, then corrective measures shall be taken to insure that the long string of casing is so set and cemented that it will hold the test pressure for thirty (30) minutes without a drop of more than ten percent (10%). Cement-bond logs or other fluid movement test(s) specified by the Supervisor shall be run to verify the seal on all wells drilled or converted for injection purposes.

(e) All injections shall be through tubing anchored by a packer that is to be set within one hundred (100) feet above the uppermost perforations or injection interval, unless otherwise approved by the Supervisor. The injection of fluids into any USDW is hereby prohibited, unless it can be demonstrated before the Board after notice and hearing that the injection zone has no use as a drinking water source due to contamination of the zone or other reasons. The injection of fluids into the annular space between strings of casing is prohibited, except as may be approved by the Supervisor.

(3) **Application for Class II Injection Well.** Application for permits for Class II injection wells shall be considered as a two-step process. An applicant seeking the Supervisor's approval for the injection of fluids as described in section (2) shall submit the following and any additional information as may be required by the Supervisor:

(a) **Step 1.**

1. Well permit requirements as set forth in Rules 400-1-2-.01, 400-2-2-.01, or 400-3-2-.01, whichever is applicable for the drilling, conversion, or reentry of a plugged and abandoned well for injection purposes;

2. A plat, in triplicate, prepared by a licensed land surveyor showing the location of the proposed injection well. The plat shall be drawn to the scale of one (1) inch equals one thousand (1,000) feet, unless otherwise stipulated by the Supervisor and shall show distances from the proposed well to the nearest governmental section lines. The plat shall show the direction of north, and the latitude and longitude in decimal degrees to five (5) significant digits and state plane coordinates of the proposed well. The plat shall also show the location and status of all other wells that have been drilled within one-fourth (1/4) mile of the proposed injection well;

3. A prognosis specifying the drilling, completion, or conversion procedures for the proposed injection well;

4. A well bore sketch showing the name, description, and depth of the proposed injection formation and the depth of the deepest USDW; a description of the casing in the injection well, or the proposed casing program, including a full description of cement already in place or as proposed; and the proposed method of testing casing before use of the injection well;

5. A complete log through the injection zone of the injection well, or if an injection well is to be drilled, a complete log through the injection zone from a nearby well. Such log shall be annotated to identify the estimated location of the base of the deepest USDW, significant aquicludes, and the injection formation;

6. A statement specifying the proposed source of injected fluids and chemical constituents of the proposed fluids to be injected and the fluids in the injection zone (If an analysis of the water in the proposed injection zone is not available such application shall include a determination of the chlorides by accepted log interpretation methods. Such data used in that calculation and the calculation shall be included in the application.); a statement specifying any proposed treatment of the injected fluids;

7. The estimated minimum and maximum amount of fluids to be injected daily and anticipated injection pressures with resultant and anticipated bottom hole pressures and the known or calculated fracturing pressure of the injection zone. All determinations

included in this application shall be supported by basic data and calculations; and

8. Proof of public notification as set forth in section (9). (An application for an injection well permit shall be filed with the Board prior to publication of notice.)

(b) **Step 2.**

1. Permit application, Form OGB-1C, Application for Permit to Inject Fluids;

2. A schematic diagram of the surface injection system and its appurtenances;

3. A well bore sketch showing the name, description, and depths of the injection formation and the base of the deepest USDW; a schematic of the well depicting the casing, cementing, perforation, tubing, and plug and packer records associated with the construction of the well; and the method and results of casing tests reported on Form OGB-7, Well Record and Completion or Recompletion Report, before use of the injection well;

4. A complete dual induction laterolog or equivalent log through the injection zone of the injection well. Such log for wells drilled for Class II operations shall be run prior to the setting of casing through the injection zone. Logs shall be annotated to identify the estimated location of the base of the deepest USDW, significant aquicludes, and the injection formation unless previously submitted in Step 1. When approved in advance by the Supervisor, depth to the base of the USDW and confirmation that significant aquicludes exist between the injection formations and the base of the USDW can be demonstrated with a dual induction or equivalent log run in a nearby well or by such other method acceptable to the Supervisor;

5. An affidavit specifying the source of injected fluids; an analysis of the fluids to be injected and the fluids in the injection zone; and a statement specifying any proposed treatment of the injected fluids;

6. Proof that the long string of casing of the injection well is cemented adequately so that injected fluids cannot migrate along the annular space to any USDW. Such proof shall be provided in the form of a cement bond log or the results of a

fluid movement study or such other method specified by the Supervisor;

7. The results of a mechanical-integrity test of the casing-tubing annulus above the packer in accordance with the pressure test requirements in section (2)(d);

8. Forms OGB-6 (if applicable), OGB-7, and OGB-8; and

9. Two (2) copies of all electrical, mechanical, radioactive, and dipmeter logs or such other surveys performed as a part of drilling, completing, or converting the well unless previously submitted to the Board.

(4) **Permit Approval Procedures.**

(a) Applications for Class II injection well permits shall be submitted in writing to the Supervisor in accordance with section (3). Conceptual approval may be granted by the Supervisor after submittal and consideration of the information required under section (3)(a). Approval to inject fluids may be granted by the Supervisor after submittal and consideration of the information required under section (3)(b).

(b) The operator may apply for a field-wide permit for injection wells for enhancement of oil or gas production, or for pressure maintenance. Such field-wide application shall include all of the information required by section (3). If a permit has been issued for a field-wide injection program, the operator will be required on each injection well, whether it be drilled or converted, to submit in an application the information required under Step 1 section (3)(a)1, (3)(a)2, (3)(a)3, and (3)(a)4, and Step 2 section (3)(b)1, (3)(b)2, (3)(b)3, (3)(b)5, (3)(b)6, (3)(b)7, (3)(b)8, and (3)(b)9.

(c) Applications for permits to inject fluids (Step 2) shall be approved or rejected by the Supervisor on the basis of the information provided in accordance with section (3) in conjunction with a thorough evaluation of the endangering influence posed by any defective wells that may exist within the area of review, which is within a minimum radius of one-fourth (1/4) mile of the proposed injection well. In the event a defective well is determined to exist within the area of review, the Supervisor may order corrective action to be taken on the defective well by the applicant prior to approving the permit to inject (Step 2). If corrective action is determined to be unfeasible, the Supervisor may reject the application or conditionally approve the application

subject to stated constraints, which will minimize the risk of fluid migration from the injection zone. In all cases, injection of fluids shall not begin until approval is obtained.

(5) **Expiration of a Permit.** A permit shall expire six (6) months from the date of issuance if no fluids have been injected or from the date of the last injection episode documented on Form OGB-17, Monthly Report of Fluids Injected, whichever is longer, unless otherwise approved by the Supervisor.

(6) **Operation of and Reports for a Class II Injection Well.**

(a) The well shall be operated at all times so that mechanical integrity of the injection operation can be verified. The mechanical integrity of the tubing-casing annulus above the packer shall be demonstrated by pressure testing when deemed necessary by the Supervisor or at least every five (5) years beginning from the date that the well is pressure tested prior to being permitted for injection. A test for mechanical integrity shall be in accordance with the pressure test requirements in section (2)(d) unless otherwise specified by the Supervisor. Tests for fluid movement along the annular space outside of the well bore shall be conducted when deemed necessary by the Supervisor. The well shall be equipped so that the injection rate, injection pressure, and tubing-casing annulus pressure data may be recorded.

(b) The operator of any Class II injection well shall submit to the Supervisor:

1. Injection-volume, injection-pressure, and tubing-casing annulus pressure data for each such well monthly. The injected volumes shall be recorded on a daily basis, and the injection pressure and tubing-casing annulus pressure reported shall be either recorded on a daily basis or computed as a daily average on the basis of a minimum of one measurement per week for each month. The information for each month shall be submitted by the twenty-eighth (28th) of the following month on Form OGB-17, Monthly Report of Fluids Injected.

2. A chemical analysis of the injected fluids shall be submitted by the first of January of each year following initial approval. The Supervisor may extend the period of time between analyses upon receipt and approval of justification.

(7) **Monitoring Records.**

(a) The operator of any Class II injection well shall submit the data required under Rules 400-1-9-.01 and 400-1-9-.02; Rules 400-2-8-.02, 400-2-8-.03(7)(b), and 400-2-8-.04; or Rule 400-3-8-.01, whichever is applicable. Said operator shall maintain the following and any additional monitoring records as may be required by the Supervisor.

1. All calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation.

2. Injection and tubing-casing annulus pressure data recorded on a daily or weekly basis and copies of the monthly reports, Form OGB-17, submitted to the Board.

3. Nature and composition of injection fluids.

(b) These records shall be maintained for a minimum of three (3) years.

(8) **Operational Status.** All Class II injection wells which were not being operated as of January 1, 1981, even though a permit by the Board or Supervisor has been heretofore granted, are forbidden to be operated until such time as a new application has been filed in accordance with section (3) and approval of the Supervisor has been obtained.

(9) **Public Participation.** In order to afford the public an opportunity to participate in the permitting process for any of the above-described Class II wells the following shall apply:

(a) The applicant for a permit shall publish a notice setting forth the details of the permit sought in the newspaper having the largest circulation in the county in which the proposed Class II injection well is located, as indicated by the most recent annual figures compiled by the Alabama Press Association. Proof of publication of such notice shall be provided to the Supervisor.

(b) The notice shall provide an adequate description of the proposed action and a description of the location of the proposed well, and the notice shall be placed one time in the newspaper at least fifteen (15) days prior to the date that the Supervisor may approve the permit.

(c) The notice shall state that interested parties may obtain additional information concerning the proposed well from the State Oil and Gas Supervisor, 420 Hackberry Lane, P. O. Box 869999, Tuscaloosa, Alabama 35486-6999.

(d) The notice shall state that a public hearing may be requested by any interested party at any time during the fifteen- (15-) day comment period.

(e) If no public hearing has been requested at the expiration of the fifteen- (15-) day period, and if the permit application meets all of the requirements of the above rule, the Supervisor may grant the permit.

(f) If there are requests for a public hearing and in the opinion of the Supervisor the requests are justified, the Board will publish a notice for public hearing in accordance with Rule 400-7-1-.01, et seq., Rules and Regulations Governing Practice and Procedure. The application for the Class II injection well will either be granted, denied, or modified by the Board after the hearing.

(10) **Operational Problems.** The operator of any Class II injection well shall immediately notify the Supervisor in the event of any mechanical or down-hole problems resulting from the operation of the well which may endanger any USDW.

(11) **Permit Modifications.** Modification of a Class II injection permit can only be made after notice in writing to and approval of the Supervisor. Significant modifications, as determined by the Supervisor, will require the operator to publish notice in accordance with section (9) prior to obtaining the Supervisor's approval.

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Ed. Note: Previous Chapter 400-4-2 (Rules 400-4-2-.01 through 400-4-2-.02) **Repealed and New Chapter** 400-4-2 (Rule 400-4-2-.01) adopted in lieu thereof: Filed April 11, 2000.