

## **R649-3-39. Hydraulic Fracturing.**

### **1. Chemical disclosure.**

1.1. The amount and type of chemicals used in a hydraulic fracturing operation shall be reported to [www.fracfocus.org](http://www.fracfocus.org) within 60 days of hydraulic fracturing completion for public disclosure.

### **2. Wellbore integrity.**

#### **2.1. The operator shall comply with R649-3-8, Casing Program.**

1. The method of cementing casing in the hole shall be by pump and plug method, displacement method, or other method approved by the division.

2. When drilling in wildcat territory or in any field where high pressures are probable, the conductor and surface strings of casing must be cemented throughout their lengths, unless another procedure is authorized or prescribed by the division, and all subsequent strings of casing must be securely anchored.

3. In areas where the pressures and formations to be encountered during drilling are known, sufficient surface casing shall be run to:

3.1. Reach a depth below all known or reasonably estimated, utilizable, domestic, fresh water levels.

3.2. Prevent blowouts or uncontrolled flows.

4. The casing program adopted must be planned to protect any potential oil or gas horizons penetrated during drilling from infiltration of waters from other sources and to prevent the migration of oil, gas, or water from one horizon to another.

#### **2.2. The operator shall comply with R649-3-9, Protection of Upper Productive Strata.**

1. No well shall be deepened for the purpose of producing oil or gas from a lower stratum until all upper productive strata are protected, either permanently by casing and cementing or temporarily through the use of tubing and packer, to the satisfaction of the division.

2. In any well that appears to have defective, poorly cemented, or corroded casing that will permit or may create underground waste or may contaminate underground or surface fresh water, the operator shall proceed with diligence to use the appropriate method and means to eliminate such hazard of underground waste or contamination of fresh water. If such hazard cannot be eliminated, the well shall be properly plugged and abandoned.

3. Natural gas that is encountered in substantial quantities in any section of a drilled hole above the ultimate objective shall be shut off with reasonable diligence, either by mudding, casing or other approved method, and shall be confined to its original source to the satisfaction of the division.

**2.3. The operator shall comply with R649-3-13, Casing Tests.**

1. In order to determine the integrity of the casing string set in the well, the operator shall, unless otherwise requested by the division, perform a pressure test of the casing to the pressures specified under R649-3- 7.4 before drilling out of any casing string, suspending drilling operations, or completing the well.

**2.4. The operator shall comply with R649-3-6, Drilling Operations.**

1. Drilling operations shall be conducted according to the drilling program submitted on the original APD and as approved by the division. Any change of plans to the original drilling program shall be submitted to the division by using Form 9, Sundry Notices and Reports on Wells and shall receive division approval prior to implementation. A change of plans necessary because of emergency conditions may be implemented without division approval. The operator shall provide the division with verbal notice of the emergency change within 24 hours and written notice within five days.

2. An operator of a drilling well as designated in R649-2-4 shall comply with reporting requirements as follows:

2.1. The spudding in of a well shall be reported to the division within 24 hours. The report should include the well name and number, drilling contractor, rig number and type, spud date and time, the date that continuous drilling will commence, the name of the person reporting the spud, and a contact telephone number.

2.2. The operator shall file Form 6, Entity Action Form with the division within five working days of spudding in a well. The division will assign the well an entity number that will identify the well on the operator's monthly oil and gas production and disposition reports.

2.3. The operator shall notify the division 24 hours in advance of all testing to be performed on the blowout preventer equipment on a well.

2.4. The operator shall submit a monthly status report for each drilling well on Form 9, Sundry Notices and Reports on Wells. The report should include the well depth and a description of the operations conducted on the well during the month. The report shall be submitted no later than the fifth day of the following calendar month until such time as the well is completed and the well completion report is filed.

2.5. The operator shall notify the division 24 hours in advance of all casing tests performed in accordance with R649-3-13.

2.6. The operator shall report to the division all fresh water sand encountered during drilling on Form 7, Report of Water Encountered During Drilling. The report shall be filed with Form 8, Well Completion or Recompletion Report and Log.

**2.5. The operator shall comply with R649-3-7, Well Control.**

1. When drilling in wildcat territory, the owner or operator shall take all reasonably necessary precautions for keeping the well under control at all times and shall provide, at the time the well is started, proper high pressure fittings and equipment. All pressure control equipment shall be maintained in good working condition at all times.

2. In all proved areas, the use of blowout prevention equipment "BOPE" shall be in accordance with the established and approved practice in the area. All pressure control equipment shall be maintained in good working condition at all times.

3. Upon installation, all ram type BOPE and related equipment, including casing, shall be tested to the lesser of the full manufacturer's working pressure rating of the equipment, 70% of the minimum internal yield pressure of any casing subject to test, or one psi/ft of the last casing string depth. Annular type BOPE are to be tested in conformance with the manufacturer's published recommendations. The operator shall maintain records of such testing until the well is completed and will submit copies of such tests to the division if required.

4. In addition to the initial pressure tests, ram and annular type preventers shall be checked for physical operation each trip. All BOPE components, with the exception of an annular type blowout preventer, shall be tested monthly to the lesser of 50% of the manufacturer's rated pressure of the BOPE, the maximum anticipated pressure to be contained at the surface, one psi/ft of the last casing string depth, or 70% of the minimum internal yield pressure of any casing subject to test.

5. If a pressure seal in the assembly is disassembled, a test of that seal shall be conducted prior to the resumption of any drilling operation. A shell test of the affected seal shall be adequate. If the affected seal is integral with the BOP stack, either pipe or blind ram, necessitating a test plug to be set in order to test the seal, the division may grant approval to proceed without testing the seal if necessary for prudent operations.

6. All tests of BOPE shall be noted on the driller's log, IADC report book, or equivalent and shall be available for examination by the director or an authorized agent during routine inspections.

7. BOPE used in possible or probable hydrogen sulfide or sour gas formations shall be suitable for use in such areas.

2.6. The operator shall comply with R649-3-23, Well Workover and Recompletion.

1. Requests for approval of a notice of intention to perform a workover or recompletion shall be filed by an operator with the division on Form 9, Sundry Notices and Reports on Wells, or if the operation includes substantial re-drilling, deepening, or plugging back of an existing well, on Form 3, Application for Permit to Drill, Deepen or Plug Back.

2. The division shall review the proposed workover or recompletion for conformance with the Oil and Gas Conservation General Rules and advise the operator of its decision and any necessary conditions of approval.

3. Recompletions shall be conducted in a manner to protect the original completion interval(s) and any other known productive intervals.

4. The same tests and reports are required for any well recompletion as are required following an original well completion.

5. The applicant shall file a subsequent report of workover on Form 9, Sundry Notices and Reports, or a subsequent report of recompletion on Form 8, Well Completion or Recompletion Report and Log, within 30 days after completing the workover or recompletion operations.

### 3. Management of flowback water and surface protection.

3.1. The operator shall comply with R649-3-15, Pollution and Surface Damage Control.

1. The operator shall take all reasonable precautions to avoid polluting lands, streams, reservoirs, natural drainage ways, and underground water.

1.1. The owner or operator shall carry on all operations and maintain the property at all times in a safe and workmanlike manner having due regard for the preservation and conservation of the property and for the health and safety of employees and people residing in close proximity to those operations.

1.2. At a minimum, the owner or operator shall:

1.2.1. Take reasonable steps to prevent and shall remove accumulations of oil or other materials deemed to be fire hazards from the vicinity of well locations, lease tanks and pits.

1.2.2. Remove from the property or store in an orderly manner, all scrap or other materials not in use.

1.2.3. Provide secure workmanlike storage for chemical containers, barrels, solvents, hydraulic fluid, and other non-exempt materials.

1.2.4. Maintain tanks in a workmanlike manner that will preclude leakage and provide for all applicable safety measures, and construct berms of sufficient height and width to contain the quantity of the largest tank at the storage facility.

1.2.4.1. The use of crude or produced water storage tanks without tops is strictly prohibited except during well testing operations.

1.2.5. Catch leaks and drips, contain spills, and cleanup promptly.

1.2.6. Waste reduction and recycling should be practiced in order to help reduce disposal volumes.

1.2.7. Produced water, tank bottoms and other miscellaneous waste should be disposed of in a manner that is in compliance with these rules and other state, federal, or local regulations or ordinances.

1.2.8. In general, good housekeeping practices should be used.

3.2. The operator shall comply with R649-3-16, Reserve Pits and Other On-site Pits.

1. Small onsite oil field pits including, but not limited to, reserve pits, emergency pits, workover and completion pits, storage pits, pipeline drip pits, and sumps shall be located and constructed in such a manner as to contain fluids and not cause pollution of waters and soils. They shall be located and constructed according to the Division guidelines for onsite pits. See Ranking Criteria for Reserve and Onsite Pit Liner Requirements, on the Oil, Gas and Mining web page.

2. Reserve pit location and construction requirements including liner requirements will be discussed at the predrill site evaluation. Special stipulations concerning the reserve pit will be included as part of the Division's approval to drill.

3. Following drilling and completion of the well the reserve pit shall be closed within one year, unless permission is granted by the Division for a longer period.

4. Pit contents shall meet the Division's Cleanup Levels (guidance document for numeric clean-up levels) or background levels prior to burial.

5. The contents may require treatment to reduce mobility and/or toxicity in order to meet cleanup levels.

6. The alternative to meeting cleanup levels would be transporting of material to an appropriate disposal facility.

3.3. The operator shall comply with R649-9-2, General Waste Management.

1. Wastes addressed by these rules are E and P Wastes that are exempt from the RCRA hazardous waste management requirements.

1.1. Before using a commercial disposal facility the operator may contact the Division to verify the status of the facility. The Division regularly updates this information on the Division of Oil, Gas and Mining web site.

1.2. Each site and/or facility used for disposal must be permitted and in good standing with the division.

2. Reduction of the amount of material generated that must be disposed of is the preferred practice.

2.1. Recycling should be used whenever possible and practical.

2.2. In general, good housekeeping practices shall be used.

2.3. Operators shall catch leaks, drips, contain spills, and cleanup promptly.

3. The method of disposal used shall be compatible with the waste that is the subject of disposal.

3.1. RCRA exempt waste shall not be mixed with nonexempt waste.

4. Every operator shall file an Annual Waste Management Plan by January 15 of each year to account for the proper disposition of produced water and other E and P Wastes.

4.1. If changes are made to the plan during the year, then the operator shall notify the division in writing of this change.

4.2. This plan will include the type and estimated annual volume of wastes that will be or have been generated.

4.3. The disposal facilities private or to be used for disposal,

4.4. The description of any waste reduction or minimization procedures.

4.5. Any onsite disposal/treatment methods or programs to be implemented by the operator.

3.4. The operator shall comply with R649-5-1, Requirements for Injection of Fluids Into Reservoirs.

1. Operations to increase ultimate recovery, such as cycling of gas, the maintenance of pressure, the introduction of gas, water or other substances into a reservoir for the purpose of secondary or other enhanced recovery or for storage and the injection of water into any formation for the purpose of water disposal shall be permitted only by order of the board after notice and hearing.

2. A petition for authority for the injection of gas, liquefied petroleum gas, air, water, or any other medium into any formation for any reason, including but not necessarily limited to the establishment of or the expansion of waterflood projects, enhanced recovery projects, and pressure maintenance projects shall contain:

2.1. The name and address of the operator of the project.

2.2. A plat showing the area involved and identifying all wells, including all proposed injection wells, in the project area and within one-half mile radius of the project area.

2.3. A full description of the particular operation for which approval is requested.

2.4. A description of the pools from which the identified wells are producing or have produced.

2.5. The names, description and depth of the pool or pools to be affected.

2.6. A copy of a log of a representative well completed in the pool.

2.7. A statement as to the type of fluid to be used for injection, its source and the estimated amounts to be injected daily.

2.8. A list of all operators or owners and surface owners within a one-half mile radius of the proposed project.

2.9. An affidavit certifying that said operators or owners and surface owners within a one-half mile radius have been provided a copy of the petition for injection.

2.10. Any additional information the board may determine is necessary to adequately review the petition.

3. Applications as required by R649-5-2 for injection wells that are located within the project area, may be submitted for board consideration and approval with the request for authorization of the recovery project.

4. Established recovery projects may be expanded and additional wells placed on injection only upon authority from the board after notice and hearing or by administrative approval.

5. If the proposed injection interval can be classified as an USDW, approval of the project is subject to the requirements of R649-5-4.

3.5. The operator shall comply with R649-5-2, Requirements for Class II Injection Wells Including Water Disposal, Storage and Enhanced Recovery Wells.

1. Injection wells shall be completed, equipped, operated, and maintained in a manner that will prevent pollution and damage to any USDW, or other resources and will confine injected fluids to the interval approved.

2. The application for an injection well shall include a properly completed UIC Form 1 and the following:

2.1. A plat showing the location of the injection well, all abandoned or active wells within a one-half mile radius of the proposed well, and the surface owner and the operator of any lands or producing leases, respectively, within a one-half mile radius of the proposed injection well.

2.2. Copies of electrical or radioactive logs, including gamma ray logs, for the proposed well run prior to the installation of casing and indicating resistivity, spontaneous potential, caliper, and porosity.

2.3. A copy of a cement bond or comparable log run for the proposed injection well after casing was set and cemented.

2.4. Copies of logs already on file with the division should be referenced, but need not be refiled.

2.5. A description of the casing or proposed casing program of the injection well and of the proposed method for testing the casing before use of the well.

2.6. A statement as to the type of fluid to be used for injection, its source and estimated amounts to be injected daily.

2.7. Standard laboratory analyses of:

2.7.1. The fluid to be injected,

2.7.2. The fluid in the formation into which the fluid is being injected, and

2.7.3. The compatibility of the fluids.

2.8. The proposed average and maximum injection pressures.

2.9. Evidence and data to support a finding that the proposed injection well will not initiate fractures through the overlying strata or a confining interval that could enable the injected fluid or formation fluid to enter any fresh water strata.

2.10. Appropriate geological data on the injection interval with confining beds clearly labeled,

2.10.1. Nearby Underground Sources of Drinking Water, including the geologic formation name,

2.10.2. Lithologic descriptions, thicknesses, depths, water quality, and lateral extent;

2.10.3. Information relative to geologic structure near the proposed well that may effect the conveyance and/or storage of the injected fluids.

2.11. A review of the mechanical condition of each well within a one-half mile radius of the proposed injection well to assure that no conduit exists that could enable fluids to migrate up or down the wellbore and enter improper intervals.

2.12. An affidavit certifying that a copy of the application has been provided to all operators, owners, and surface owners within a one-half mile radius of the proposed injection well.

2.13. Any other additional information that the board or division may determine is necessary to adequately review the application.

3. Applications for injection wells that are within a recovery project area will be considered for approval:

3.1. Pursuant to R649-5-1-3.

3.2. Subsequent to board approval of a recovery project pursuant to R649-5-1-1.

4. Approval of an injection well is subject to the requirements of R649-5-4, if the proposed injection interval can be classified as an USDW.



5. In addition to the requirements of this section, the provisions of R649-3-1, R649-3-4, R649-3-24, R649-3-32, and R649-8-1 and R649-10 shall apply to all Class II injection wells.

3.6. The operator shall comply with R649-5-3, Noticing and Approval of Injection Wells.

1. Applications for injection wells submitted pursuant to R649-5-1-3 shall be noticed in conformance with the procedural rules of the board as part of the hearing for the recovery project. Any person desiring to object to approval of such an application for an injection well shall file the objection in conformance with the procedural rules of the board.

2. The receipt of a complete and technically adequate application, other than an application submitted pursuant to R649-5-3-1, shall be considered as a request for agency action by the Division and shall be published in a daily newspaper of general circulation in the city and county of Salt Lake and in a newspaper of general circulation in the county where the proposed well is located. A copy of the notice of agency action shall also be sent to all parties including government agencies. The notice of agency action shall contain at least the following information:

2.1. The applicant's name, business address, and telephone number.

2.2. The location of the proposed well.

2.3. A description of proposed operation.

3. If no written objection to the application for administrative approval of an injection well is received by the division within 15 days after publication of the notice of agency action, or an aquifer exemption is not required in accordance with R649-5-4, and a board hearing is not otherwise required, the application may be considered and approved administratively.

4. If a written objection to an application for administrative approval of an injection well is received by the division within 15 days after publication of the notice of application, or if a hearing is required by these rules or deemed advisable by the director, the application shall be set for notice and hearing by the board.

5. The director shall have the authority to grant an exception to the hearing requirements of R649-5- 1.1 for conversion to injection of additional wells that constitute a modification or expansion of an authorized project provided that any such well is necessary to develop or maintain thorough and efficient recovery operations for any authorized project and provided that no objection is received pursuant to R649-5-3-3.

6. The director shall have authority to grant an exception to the hearing requirements of R649-5-1-1 for water disposal wells provided disposal is into a formation or interval that is not currently nor anticipated to be an underground

source of drinking water and provided that no objection is received pursuant to R649-5-3-3.

**3.7. The operator shall comply with R649-5-4, Aquifer Exemption.**

1. The board may, after notice and hearing and subject to the EPA approval, authorize the exemption of certain aquifers from classification as an USDW based upon the following findings:

1.1. The aquifer does not currently serve as a source of drinking water.

1.2. The aquifer cannot now and will not in the future serve as a source of drinking water for any of the following reasons:

1.2.1. The aquifer is mineral, hydrocarbon or geothermal energy producing, or it can be demonstrated by the applicant as part of a permit application for a Class II well operation, to contain minerals or hydrocarbons that, considering their quantity and location, are expected to be commercially producible.

1.2.2. The aquifer is situated at a depth or location that makes recovery of water for drinking water purposes economically or technologically impractical.

1.2.3. The aquifer is contaminated to the extent that it would be economically or technologically impractical to render water from the aquifer fit for human consumption.

1.2.4. The aquifer is located above a Class III well mining area subject to subsidence or catastrophic collapse.

1.3. The total dissolved solids content of the water from the aquifer is more than 3,000 and less than 10,000 mg/l, and the aquifer is not reasonably expected to be used as a source of fresh or potable water.

2. Interested parties desiring to have an aquifer exempted from classification as a USDW, shall submit to the division an application that includes sufficient data to justify the proposal. The division shall consider the application and if appropriate, will advise the applicant to submit a request to the board for an aquifer exemption.

**3.8. The operator shall comply with R649-5-5, Testing and Monitoring of Injection Wells.**

1. Before operating a new injection well, the casing shall be tested to a pressure not less than the maximum authorized injection pressure, or to a pressure of 300 psi, whichever is greater.

2. Before operating an existing well newly converted to an injection well, the casing outside the tubing shall be tested to a pressure not less than the maximum authorized injection pressure, or to a pressure of 1,000 psi, whichever is lesser, provided that each well shall be tested to a minimum pressure of 300 psi.

3. In order to demonstrate continuing mechanical integrity after commencement of injection operations, all injection wells shall be pressure tested or monitored as follows:

3.1. Pressure Test. The casing-tubing annulus above the packer shall be pressure tested not less than once each five years to a pressure equal to the maximum authorized injection pressure or to a pressure of 1,000 psi, whichever is lesser, provided that no test pressure shall be less than 300 psi. A report documenting the test results shall be submitted to the division.

3.2. Monitoring. If approved by the director, and in lieu of the pressure testing requirement, the operator may monitor the pressure of the casing-tubing annulus monthly during actual injection operations and report the results to the division.

3.3. Other test procedures or devices such as tracer surveys, temperature logs or noise logs may be required by the division on a case-by-case basis.

3.4. The operator shall sample and analyze the fluids injected in each disposal well or enhanced recovery project at sufficiently frequent time intervals to yield data representative of fluid characteristics, and no less frequently than every year.

3.5. The operator shall submit a copy of the fluid analysis to the division with the Annual Fluid Injection Report, UIC Form 4.

3.9. The operator shall comply with R649-5-6, Duration of Approval for Injection Wells.

1. Approvals or orders authorizing injection wells shall be valid for the life of the well, unless revoked by the board for just cause, after notice and hearing.

2. An approval may be administratively amended if:

2.1. There is a substantial change of conditions in the injection well operation.

2.2. There are substantial changes to the information originally furnished.

2.3. Information as to the permitted operation indicates that an USDW is no longer being protected.

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