**Section 240.340 Proposed Well Construction and Operating Parameters**

a) Well Construction Records for Conversion Wells

If the application is for the conversion of a previously drilled well, the applicant shall:

1) submit a complete copy of all available geophysical logs run on the well;

2) submit a copy of the initial Completion Report or casing and cementing records of the well; and

3) establish external mechanical integrity in accordance with Section 240.770(c).

b) Schematic Diagram

The applicant shall submit a schematic diagram of the proposed injection well showing:

1) the total depth and plugged back depth of the well;

2) the sizes and depths of the holes drilled for the surface casing, mine or intermediate casing, and production casing;

3) the sizes and depths of all casing in the well and any additional casing to be used in the well;

4) the amount of cement used for each string of casing in the well and any additional cement to be used in the well;

5) the size of the tubing and setting depth of the packer;

6) the top and bottom depths of all perforated intervals in the casing; and

7) the geologic name and the depth of the top and bottom of the proposed injection interval.

c) Proposed Injection Rate

The applicant shall submit the proposed injection rate expressed in average barrels per day.

d) Injection Fluid

The applicant shall submit the depth and geologic name of the formations from which the injection fluid is to be obtained, a standard laboratory analysis of a representative sample of the fluid to be injected and the date the sample was obtained. The sample shall be analyzed for at least the following parameters: pH, Chloride, Total Dissolved Solids, and Specific Gravity. The sample shall be obtained and analyzed no earlier than one year prior to the date of filing of the application. If the injection fluid is other than water, the sample shall be analyzed for the chemical components and Specific Gravity of the fluid.

e) Proposed Maximum Injection Pressure

1) The applicant shall submit the proposed maximum injection pressure in accordance with the following formula:

MIP = (.80 - (.433 X SG)) X D - 14.7

Where:

|  |  |  |
| --- | --- | --- |
| MIP  | = | maximum allowable injection pressure (PSI) |
| SG | = | specific gravity of the injection fluid |
| D | = | depth of the top of the uppermost injection interval (ft.) |

2) If the proposed maximum injection pressure exceeds the amount calculated in accordance with subsection (e)(1), the applicant shall submit the most recent information showing that the proposed maximum injection pressure will not initiate or propagate fractures in the injection interval or overlying strata that could enable the injection fluid or the fluid in the injection interval to leave the permitted injection intervals. The types of information that will be considered acceptable by the Department include, but are not limited to:

A) A copy of the ticket (record of each injection pressure and corresponding time) and pressure chart (injection pressure vs. time) from a "frac" or "acid" treatment in the injection interval in the proposed well, or from the same interval or a stratigraphically higher interval in a well within 1 mile of the proposed well, that shows the Instantaneous Shut-In Pressure (ISIP). The shut-down pressure, ISIP, and 5-minute shut down pressure must be obtained, read and recorded. The maximum allowable injection pressure shall be 10% less than the ISIP measured at the surface unless the specific gravity of the treatment fluid is less than the specific gravity of the proposed injection fluid, in that case the ISIP shall be measured at the injection interval.

B) The results of a step rate test, both ticket (record of each injection rate and the corresponding pressure and time) and chart (injection rate and resulting pressure vs. time), from the injection interval in the proposed well, or from the same interval or a stratigraphically higher interval in a well within 1 mile of the proposed well. The maximum allowable injection pressure shall be 10% less than the ISIP, measured at the surface, if the formation fracture pressure was exceeded during the test or an existing fracture was opened. In the event the formation fracture pressure was not exceeded and an existing fracture was not opened, the maximum allowable injection pressure shall be the highest step pressure recorded during the step rate test. A step rate test shall, at a minimum, include the following:

i) A statement specifying the length of the shut-in period. Prior to testing, shut in the well long enough that the bottom-hole pressure approximates shut-in formation pressure.

ii) Unless further stipulated in this subsection (e)(2)(B), measurement of at least 6 rate steps recording the injection rate, pressure and elapsed time of each.

iii) An initial zero injection rate (pressure stabilizing) step.

iv) Each rate step after the zero injection rate step shall be at least 120 percent of the preceding rate.

v) Each rate step shall be of equal length and of at least 4 minutes in duration.

vi) At least 3 rate steps below the formation fracture pressure are required; if the formation fracture pressure was not exceeded and an existing fracture was not opened, at least 5 rate steps are required.

vii) If the formation fracture pressure was exceeded, at least 2 rate steps above the formation fracture pressure are required.

viii) If an existing fracture is opened during the test, no further rate steps are required.

ix) If the formation fracture pressure was exceeded or an existing fracture was opened, the shut-down pressure, ISIP and 5-minutes shut-down pressure must be obtained, read and recorded.

x) If the Department has reason to believe induced fractures have occurred as a result of long term injection above the fracture pressure, the Department shall determine if the results of a step rate test are acceptable to permit the proposed maximum injection pressure.

C) In the event the Department determines the information submitted under this subsection (e)(2) is not acceptable, the Department will issue a deficiency letter. If a timely response is not received or the response is determined inadequate, the MIP will be calculated using the formula in subsection (e)(1).

(Source: Amended at 41 Ill. Reg. 2957, effective February 21, 2017)