
Hydraulic Fracturing Requirements

Directive PNG048

December 2022

Revision 1.0

Governing Legislation:

Act: *The Oil and Gas Conservation Act*

Regulation: *The Oil and Gas Conservation Regulations, 2012*

Order: 259/22

Record of Change

Revision	Date	Description
0.0		Initial Draft
1.0	December, 2022	Approved first version

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1. Introduction

This Directive outlines the requirements of the Ministry of Energy and Resources (ER) for hydraulic fracture operations in Saskatchewan. It provides information on actions that are related to hydraulic fracture operations to reduce the risk of these operations. The purpose of this Directive is to:

- Outline the requirements to manage the risk of hydraulic fracturing operations through Fracture Planning and Well Control programs;
- Provide instructions on reporting communication events; and
- Reduce impacts at surface and to nearby water source wells.

Questions concerning the requirements set out in this document should be directed to the ER Service Desk at ER.servicedesk@gov.sk.ca or 1-855-219-9373.

1.1 Governing Legislation

The requirements outlined in this Directive are authorized under and supported by:

- *The Oil and Gas Conservation Act (OGCA)*;
- *The Oil and Gas Conservation Regulations, 2012 (OGCR)*;
- Associated Directives and Guidelines:
 - *Directive PNG013: Well Data Submission Requirements (Directive PNG013)*;
 - *Directive PNG014: Incident Reporting Requirements (Directive PNG014)*

It is the responsibility of all operators, as specified in the legislation, to be aware of and to ensure compliance with these requirements.

2. Definitions

Adjusted Maximum Pressure: The maximum pressure rating of equipment and casing determined by the original specification or rating that has been reduced to account for age and safety margins.

At-Risk Offset Wells: An offset well that may be affected by the fracturing operation.

Communication Event: A flow of fluids and/or pressure into an offset well as a result of hydraulic fracture operations.

Fracture Half Length: The distance from the well to the outer tip of the fracture induced by hydraulic fracture operations.

Fracture Planning Zone (FPZ): The area surrounding the well that is used in identifying offset wells. The outer boundary of the FPZ is equal to a distance of twice the longest fracture half-length.

High Vapour Pressure Hydrocarbon: Any hydrocarbon and stabilized hydrocarbon mixture with a Reid vapour pressure greater than 14 kilopascals (kPa).

Hydraulic Fracture: A treatment where fluids are pumped into a zone of interest at high pressures to open fractures in the reservoir to increase communication.

Offset Well: Any well in the vicinity of the well that is being fractured.

Subject Well: The well that planned to conduct the hydraulic fracturing operation.

Special Consideration Well: An offset well outside the FPZ that may still be at-risk due to specific characteristics of the well or the formation and may also include wells that target different formations.

3. Fracture Requirements

3.1 Interwellbore Communication Planning

3.1.1 Fracture Planning Program

Licensees must develop a Fracture Planning Program prior to initiating any fracture operations. The program must include:

- Longest planned fracture half-length;
- Determination of the FPZ;
- Identification of all offset wells including those within the FPZ and all special consideration wells;
- An assessment of well integrity for each offset well;
- Risk assessment using [Industry Recommended Practice 24: Fracture Stimulation – Interwellbore Communication](#) (IRP 24) methodology for every identified offset well;
- A list of all offset wells that are identified as being at-risk based on the risk assessment; and
- Identification of energizing gas(es) used in fracture fluids.

3.1.2 Well Control Program

Licensees must develop and maintain a Well Control Program prior to initiating any fracture operations with details for every at-risk offset well that includes:

- Distance from the subject well to the at-risk offset well;
- Adjusted maximum pressure for each at-risk offset well;
- Control method to be used at each at-risk offset well as outlined in IRP 24;
- The method(s) of detection of interwellbore communication; and
- How information will be relayed from an at-risk offset well back to the hydraulic fracturing operations should an interwellbore communication event occur.

Offset wells within the FPZ or special consideration wells that target the same formation as the fractured well shall be closed to atmosphere during fracture operations. Wells must be either shut in, shut in and monitored, or monitored while open to a storage tank or flowline.

3.2 Communication Events

Any communication event with an offset well that is 500 kPa or 25 per cent of the adjusted maximum pressure, whichever is the lower pressure, must be reported to ER. These events are to be reported directly in the Integrated Resource Information System (IRIS) and are to include:

- Licence number of offset well;
- Distance of the offset well from fractured wellbore;
- Observed pressure at the offset well, if monitored; and
- Adjusted maximum pressure of the offset well.

If pressure is not monitored at the offset well, then any evidence that a communication event occurred during operations must be reported pursuant to this section. If evidence of a communication event is found after the initial hydraulic fracture reporting was completed, the communication event must still be reported in IRIS.

Any release at an offset well as a result of the fracture operation must be reported as per Directive PNG014.

3.3 Offset Well Consultation and Engagement

The subject well licensee must engage with all at-risk offset well licensees to come to a mutually agreed upon Well Control Program. Both the subject well licensee and the at-risk offset well licensee are responsible for maintaining well control of their respective wells. ER may assign a control program upon receiving application if an agreement cannot be met, or if the offset well does not have an active licensee.

Licensees must provide notification to all offset well licensees within 600 meters or within the FPZ, whichever is greater, at least 15 days prior to commencing hydraulic fracturing operations in order to inform offset licensees of the operation.

Hydraulic fracturing operations must not commence if there are any active vertical or horizontal drilling operations, or well servicing operations that target the same formation or deeper and are within 600 meters (m) or within the FPZ, whichever is greater, of the subject well.

Conversely, if hydraulic fracturing operations are active within 600 m of a proposed drilling location or well servicing operation targeting the same formation or deeper, drilling and well servicing operations shall not begin until the offset hydraulic fracturing operations have been completed, unless otherwise approved by ER.

4. Fracture Report Requirements

Directive PNG013 states that licensees that hydraulically fracture a completion must submit a copy of the Fracture Report, Form A-2: Notification of Flowback Fluid and Frac Sand Disposal, the Fracture Planning and Well Control Programs and the Fracture Fluid Report within 30 days of the fracture date.

5. Hydraulic Fracturing Near Private Water Wells

Licensees are responsible for ensuring there is no communication events that impact any water wells as a result of hydraulic fracturing operations. Any private water source wells within the FPZ must have baseline sampling prior to commencing operations unless otherwise approved. If a water well displays signs of impact after nearby hydraulic fracture operations were conducted, the licensee must investigate to determine if their operations impacted the quality of the well.

6. High Vapour Pressure Hydrocarbon Use

As set out in subsections 69(4) and 69(5) of the OGCR, no operator shall blend high vapour pressure hydrocarbons with propping agents for the purpose of hydraulically fracturing a formation. On application, ER may approve the use of blending high vapour pressure hydrocarbon with propping agents if there is no other carrying fluid available that will be similarly effective.