

# Casing and Cementing Requirements

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Directive PNG005

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Revision 1.0

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Governing Legislation:

Act: *The Oil and Gas Conservation Act*

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

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### Record of Change

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## 1. Introduction

This Directive outlines the regulations followed by the Saskatchewan Ministry of the Economy (ECON) regarding cementing and casing requirements for oil and gas wells in Saskatchewan.

Questions concerning the requirements set out in this document should be directed to the PNG support line at 1-855-219-9373.

### 1.1 Governing Legislation

The requirements set out in this Directive are based on regulations in *The Oil and Gas Conservation Regulations, 2012 (OGCR)*.

Sections 42 and 43 of the *OGCR* contain the regulations pertinent to the topics in this Directive. Licensees should consult the *OGCR* in conjunction with this Directive.

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

If a licensee is aware of any cementing or casing requirements set out in this Directive or in the *OGCR* that are not being met in one or more of their wells, they must inform ECON as soon as the non-compliance is identified. The Ministry will then consider the most appropriate action to take to address the non-compliance.

## 2. Surface Casing Requirements

Current surface casing requirements are listed below with the exception of those areas described in Appendix 1 where additional requirements must be followed.

The regulations governing surface casing requirements for wells in Saskatchewan are found in section 42 of the *OGCR* and are reproduced below.

**42(1)** *The minimum requirements for surface casing are as follows:*

*(a) surface casing meeting American Petroleum Institute specifications must be used in all wells and structure test holes;*

*(b) in every well drilled, sufficient surface casing must be run to reach a minimum depth that is equal to the deepest of:*

*(i) 20 metres below the base of the glacial drift;*

*(ii) 10% of the projected total depth of the well; and*

*(iii) 75 metres;*

*(c) surface casing must be cemented in place by the pump and plug method or by the displacement method, with sufficient cement to circulate to the top of the hole; and*

*(d) cement must be allowed to set under pressure for at least eight hours before the plug is drilled.*

*(2) If a float collar or guide shoe is used in setting surface casing, pressure at the surface may be released immediately on completion of the cement job but only if there is no bleed-back.*

*(3) No surface casing shall be removed from any well or structure test hole.*

*(4) The operator of a well that is completed to produce oil or gas or to inject fluid shall leave the annulus between the second casing string and the surface casing open to the atmosphere.*

*(5) The annulus vent line must:*

*(a) have a minimum diameter of five centimetres;*

*(b) extend at least 50 centimetres above ground level;*

*(c) terminate so that any flow is directed either in a downward direction or parallel to the ground;*

*(d) contain an open valve; and*

*(e) have a working pressure rating for all parts of at least 23 kilopascals for every metre of depth of the surface casing.*

### **3. Presetting Surface Casing Requirements**

ECON allows for presetting surface casing without prior approval. In these cases, the main hole may be drilled with a subsequent rig. Presetting surface casing must be done in accordance with the following requirements.

- The well licence application must indicate the use of preset surface casing.
- Casing centralizers shall be run 3 metres off bottom, on top of second joint, and every third joint thereafter.
- The surface hole must be drilled and casing cemented in place at one location prior to moving the rig to another location.
- A third-party (rather than surface-casing rig) shall conduct cementing operations.
- A plug-loading head shall be utilized to minimize the introduction of air into the casing while cementing.
- A designated company representative must be onsite while the surface hole is drilled, while the surface casing is run and during cementing operations, and that representative must report the surface casing preset details as required by ECON.
- Drilling to the licensed total depth of the well must be completed within one year from the date of license, otherwise any preset activity may be required by ECON to be abandoned.

#### **4. Production Casing and Adequate Equipment Requirements**

Section 43 of the *OGCR* provides the requirements for production casing and equipment requirements for all wells. In addition, for all areas of Saskatchewan, production or intermediate casing must be cemented into the next string of casing.

Licensees must document that any use of non-American Petroleum Institute (API) casing meets well-design requirements, and a licensee may be required to supply documentation to the Ministry supporting this fact, otherwise licenses may be cancelled or the well may be suspended.

Wellbore and casing integrity must be suitable for the purpose for which the well is being used, independent of the intended use at the time of drilling.

Non-API casing (I-55) may not be used in wells penetrating the top of the Second White Specks Formation. In this case, the production casing must meet or exceed current API-Q1 specifications and shall be cemented to surface.

## Appendix 1: Areas with Additional Obligations

### 1.1. Minimum Surface Casing Requirements

Within the listed below, if the ground elevation is less than 564.0 m, a well must have surface casing set 137 m below surface; if the ground elevation is greater than 564.0 m, a well must have surface casing set 107 m below surface.

All lands lying West of the Third Meridian:

- (a) In Township 50, Range 22: All Sections;
- In Township 50, Range 23: All Sections;
- In Township 50, Range 24: All Sections;
- In Township 50, Range 25: All Sections;
- In Township 50, Range 26: All Sections;
- In Township 51, Range 22: All Sections;
- In Township 51, Range 23: All Sections;
- In Township 51, Range 24: All Sections;
- In Township 51, Range 25: All Sections;
- In Township 51, Range 26: All Sections;
- In Township 52, Range 22: All Sections;
- In Township 52, Range 23: All Sections;
- In Township 52, Range 24: All Sections;
- In Township 52, Range 25: All Sections;
- In Township 52, Range 26: All Sections.

### 1.2. Potable Water Sands Requirements

Within the lands listed below, a minimum 9.0 m length of conductor pipe must be set to protect the potable water sands.

All lands lying West of the First Meridian:

- (a) In Township 5, Range 33: The southwest quarter of Section 30.

### 1.3. Ground Water Precaution Areas

Within the lands listed below, conductor pipe must be used. The use of sump equipment is not permitted, nor is land spraying while drilling.

All lands West of the Second Meridian:

- (a) In Township 6, Range 15: Sections 34 and 35.

#### 1.4. Perched Aquifer Area

Within the lands listed below, perched aquifers occur above the regional water table and necessary precautions must be made to prevent contamination. As a minimum, conductor pipe must be used. The use of sump equipment is not permitted, nor is land spraying while drilling.

All lands lying West of the Second Meridian:

- (a) In Township 7, Range 5: The northeast quarter of Section 35; the northwest quarter of Section 36;
- In Township 8, Range 5: The south half and legal subdivisions 11 and 12 of Section 2; the north half and legal subdivisions 7 and 8 of Section 3; the north half and legal subdivisions 5 and 6 of Section 4; the north half, southeast quarter, and legal subdivisions 5 and 6 of Section 5; the north half of Section 6; the northeast quarter and south half of Section 7; Section 8 and 9; the west half and legal subdivisions 2 and 7 of Section 10; Section 16 and 17; the southeast of Section 19; the south half of Section 20;
- In Township 8, Range 6: The north half of Section 1; the north half of Section 10; Section 11 and 12; the south half of Section 13; the northeast quarter, south half, and legal subdivisions 11 and 12 of Section 14; the south half, northwest quarter, and legal subdivisions 9 and 10 of Section 15; the north half and legal subdivisions 7 and 8 of Section 16; legal subdivisions 15 and 16 of Section 17; legal subdivisions 1,8,9,and 16 of Section 19; Section 20 and 21; the west half of Section 22; the southeast quarter and legal subdivisions 3 and 4 of Section 27; south half and legal subdivisions 9, 10, 11, 12 of Section 28; Section 29; the southeast quarter and legal subdivisions 3 and 4 of Section 30; the southwest quarter and legal subdivisions 11, 12 and 13 of Section 32; the northeast quarter and legal subdivisions 1 and 8 of Section 31;



In Township 9, Range 6:

The west half of Section 5; the northwest quarter, southeast quarter, and legal subdivisions 3 and 6 of Section 6.