

Directive 008

Surface Casing Depth Calculation



To determine the minimum surface casing depths in the specified areas. See section 2.5 if the well is in the Senex, Kidney, Trout, or associated areas; the high-hazard area of southeastern Alberta; or the surface mineable area.

UWI:	TVD:	KB Elevation:
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Part I: Water Well Search	
A: Depth of deepest water well within 200 m: _____ m TVD	B: Minimum surface casing depth required: [A]+25 = _____ m TVD

Part II: Surface Casing Required	
1. Representative pressure measurement in area: _____ kPa	
2. Depth of pressure measurement: _____ m TVD	
3. Reference well(s): _____ / _____ - _____ - _____ W	
4. Higher pressures were found but were discounted: _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
Reason:	
5. Maximum gradient: [1] ÷ [2] = _____ kPa/m	
6. Surface casing (SC) depth required: _____ m TVD	
Option 1: Calculate surface casing depth. SC depth = $\frac{\text{Maximum gradient} \times \text{TVD} \times (0.5 - 0.0000625 \text{ TVD})}{22 \text{ kPa/m}}$	
Option 2: Calculate SC depth for each zone. SC depth = $\frac{\text{Maximum gradient (at zone)} \times \text{TVD (at zone)} \times (0.5 - 0.0000625 \text{ TVD (at zone)})}{22 \text{ kPa/m}}$	
7. 10% of TVD = _____ m TVD	
8. Surface casing depth required: _____ m TVD (must be the greater value of [B], [6], or [7])	
If surface casing depth = [B], no surface casing reduction is allowed.	

Part III: Surface Casing Reduction	
Type 1—Reduction for Wells Drilled with Well Control Enhancements	
Surface casing depth required: _____ m TVD ([8])	
Reduced surface casing depth: Surface casing depth x 0.913 = _____ m TVD (must be ≥[B])	
Indicate which one of the following two options will be used:	
1. A PVT system will be installed with a probe in each active drilling fluid compartment; the system will be accurate to ±0.5 m ³ and will alarm at ±0.2 m ³ _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
2. A formation leak-off test or a formation integrity test will be performed, in accordance with Appendix C _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
Type 2—Reduction for Low-Risk Wells	
Surface casing depth required: _____ m TVD ([8])	
Reduced surface casing depth: ([8]) x 0.707 = _____ m TVD (must be ≥[B])	
Indicate which of the following criteria will be met (at least three must be selected):	
1. The well is in an established area (see Appendix A) _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
2. The well is low risk _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
The field kick rate is less than 3% of wells drilled to a formation not exceeding the terminating formation of this well _____ <input type="checkbox"/> Yes <input type="checkbox"/> No	
<i>(continued on next page)</i>	

3. A PVT system will be installed with a probe in each active drilling fluid compartment; the system is accurate to ±0.5 m³ and will alarm at ±1.0 m³ Yes No

4. A formation leak-off test or a formation integrity test will be performed in accordance with Appendix C Yes No

Type 3—Reduction to Historical Setting Depth

Surface casing depth required: m TVD ([8])

Historical surface casing depth required: m TVD (must be ≥[B])

Indicate if each of the following will be met:

1. The well is in an established area (see Appendix A) Yes No

2. The well is low risk Yes No

The field kick rate is less than 3% of wells drilled to a formation not exceeding the terminating formation of this well Yes No

3. A PVT system will be installed with a probe in each active drilling fluid compartment; the system is accurate to ±0.5 m³ and will alarm at ±1.0 m³ Yes No

4. A formation leak-off test or a formation integrity test will be performed in accordance with Appendix C Yes No

5. An emergency flare line will be installed in accordance with *Directive 036* Yes No

Historical depth data: The historical depth requested is the same or greater than that set in the wells listed below.

Well Location	Total Depth (m)	Surface Casing (m)	Year

Type 4—Reduction to a Depth Above a Problem Zone

Surface casing depth required: m TVD ([8])

Estimated top of problem zone: m TVD

Name of problem zone:

Reason zone is a problem:

Surface casing depth proposed: m TVD (must be ≥[B])

Indicate if each of the following will be met:

1. A PVT system will be installed with a probe in each active drilling fluid compartment; the system is accurate to ±0.5 m³ and will alarm at ±1.0 m³ Yes No

2. A formation leak-off test or a formation integrity test will be performed in accordance with Appendix C Yes No

3. An emergency flare line will be installed in accordance with *Directive 036* Yes No

Part IV: Surface Casing Exemption (if applicable)

1. The licensee is not setting surface casing and meets the requirements in Section 3 Yes No