

### § 250.413

Projection system for the surface and subsurface locations of the proposed well; and

(e) State the units and geodetic datum (including whether the datum is North American Datum 27 or 83) for these coordinates. If the datum was converted, you must state the method used for this conversion, since the various methods may produce different values.

#### **§ 250.413 What must my description of well drilling design criteria address?**

Your description of well drilling design criteria must address:

- (a) Pore pressures;
- (b) Formation fracture gradients, adjusted for water depth;
- (c) Potential lost circulation zones;
- (d) Drilling fluid weights;
- (e) Casing setting depths;
- (f) Maximum anticipated surface pressures. For this section, maximum anticipated surface pressures are the pressures that you reasonably expect to be exerted upon a casing string and its related wellhead equipment. In calculating maximum anticipated surface pressures, you must consider: drilling, completion, and producing conditions; drilling fluid densities to be used below various casing strings; fracture gradients of the exposed formations; casing setting depths; total well depth; formation fluid types; safety margins; and other pertinent conditions. You must include the calculations used to determine the pressures for the drilling and the completion phases, including the anticipated surface pressure used for designing the production string;
- (g) A single plot containing estimated pore pressures, formation fracture gradients, proposed drilling fluid weights, and casing setting depths in true vertical measurements;
- (h) A summary report of the shallow hazards site survey that describes the geological and manmade conditions if not previously submitted; and
- (i) Permafrost zones, if applicable.

#### **§ 250.414 What must my drilling prognosis include?**

Your drilling prognosis must include a brief description of the procedures you will follow in drilling the well.

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This prognosis includes but is not limited to the following:

- (a) Projected plans for coring at specified depths;
- (b) Projected plans for logging;
- (c) Planned safe drilling margin between proposed drilling fluid weights and estimated pore pressures. This safe drilling margin may be shown on the plot required by § 250.413(g);
- (d) Estimated depths to the top of significant marker formations;
- (e) Estimated depths to significant porous and permeable zones containing fresh water, oil, gas, or abnormally pressured formation fluids;
- (f) Estimated depths to major faults;
- (g) Estimated depths of permafrost, if applicable;
- (h) A list and description of all requests for using alternative procedures or departures from the requirements of this subpart in one place in the APD. You must explain how the alternative procedures afford an equal or greater degree of protection, safety, or performance, or why you need the departures; and
- (i) Projected plans for well testing (refer to § 250.460 for safety requirements).

#### **§ 250.415 What must my casing and cementing programs include?**

Your casing and cementing programs must include:

- (a) Hole sizes and casing sizes, including: weights; grades; collapse, and burst values; types of connection; and setting depths (measured and true vertical depth (TVD));
- (b) Casing design safety factors for tension, collapse, and burst with the assumptions made to arrive at these values;
- (c) Type and amount of cement (in cubic feet) planned for each casing string;
- (d) In areas containing permafrost, setting depths for conductor and surface casing based on the anticipated depth of the permafrost. Your program must provide protection from thaw subsidence and freezeback effect, proper anchorage, and well control;
- (e) A statement of how you evaluated the best practices included in API RP 65, Recommended Practice for Cementing Shallow Water Flow Zones in Deep