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§ 194.33 Consideration of drilling events in performance assessments.

(a) Performance assessments shall examine deep drilling and shallow drilling that may potentially affect the disposal system during the regulatory time frame.

(b) The following assumptions and process shall be used in assessing the likelihood and consequences of drilling events:

1. Performance assessments shall consider processes and events that may affect the disposal system during the regulatory time frame.

2. Performance assessments shall include an analysis of the effects on the disposal system of any activities that occur in the vicinity of the disposal system, such as mining and boreholes.

3. Performance assessments shall include information on the potential processes, events, and combinations thereof that may affect the disposal system.

4. Performance assessments shall provide documentation of why certain processes, events, or combinations thereof were not included in the assessment.

CONTAINMENT REQUIREMENTS

§ 194.31 Application of release limits.

The release limits shall be calculated according to part 191, appendix A of this chapter, using the total activity, in curies, that will exist in the disposal system at the time of disposal.

§ 194.32 Scope of performance assessments.

(a) Performance assessments shall consider natural processes and events, mining, deep drilling, and shallow drilling that may affect the disposal system during the regulatory time frame.

(b) Assessments of mining effects may be limited to changes in the hydraulic conductivity of the hydrogeologic units of the disposal system from excavation mining for natural resources. Mining shall be assumed to occur with a one in 100 probability in each century of the regulatory time frame. Performance assessments shall assume that mineral deposits of those resources, similar in quality and type to those resources currently extracted from the Delaware Basin, will be completely removed from the controlled area during the century in which such mining is randomly calculated to occur. Complete removal of such mineral resources shall be assumed to occur only once during the regulatory time frame.

(c) Performance assessments shall include an analysis of the effects on the disposal system of any activities that occur in the vicinity of the disposal system, including boreholes and leases that may be used for fluid injection activities.

(d) Performance assessments need not consider processes and events that have less than one chance in 10,000 of occurring over 10,000 years.

(e) Any compliance application(s) shall include information which:

1. Identifies all potential processes, events or sequences and combinations of processes and events that may affect the disposal system during the regulatory time frame.

2. Identifies the processes, events or sequences and combinations of processes and events included in performance assessments.

3. Documents why any processes, events or sequences and combinations of processes and events identified pursuant to paragraph (e)(1) of this section were not included in performance assessment results provided in any compliance application.
§ 194.34 Results of performance assessments.

(a) The results of performance assessments shall be assembled into “complementary cumulative distribution functions” (CCDFs) that represent the probability of exceeding various levels of cumulative release caused by all significant processes and events.

(b) Probability distributions for uncertain disposal system parameter values used in performance assessments shall be developed and documented in any compliance application.

(c) Computational techniques, which draw random samples from across the entire range of the probability distributions developed pursuant to paragraph (b) of this section, shall be used in generating CCDFs and shall be documented in any compliance application.

(d) The number of CCDFs generated shall be large enough such that, at cumulative releases of 1 and 10, the maximum CCDF generated exceeds the 99th percentile of the population of CCDFs with at least a 0.95 probability. Values of cumulative release shall be calculated according to Note 6 of Table 1, appendix A of part 191 of this chapter.

(e) Any compliance application shall display the full range of CCDFs generated.

(f) Any compliance application shall provide information which demonstrates that there is at least a 95 percent level of statistical confidence that the mean of the population of CCDFs meets the containment requirements of §191.13 of this chapter.

ASSURANCE REQUIREMENTS

§ 194.41 Active institutional controls.

(a) Any compliance application shall include detailed descriptions of proposed active institutional controls, the controls’ location, and the period of