

material. The detailed information referred to in this paragraph shall include:

(A) the orientation, distribution, aperture in-filling and origin of fractures, discontinuities, and heterogeneities;

(B) the presence and characteristics of other potential pathways such as solution features, breccia pipes, or other potentially permeable features;

(C) the geomechanical properties and conditions, including pore pressure and ambient stress conditions;

(D) the hydrogeologic properties and conditions;

(E) the geochemical properties; and

(F) the anticipated response of the geomechanical, hydrogeologic, and geochemical systems to the maximum design thermal loading, given the pattern of fractures and other discontinuities and the heat transfer properties of the rock mass and groundwater.

(ii) * * *

(B) Analyses to determine the degree to which each of the favorable and potentially adverse conditions, if present, has been characterized, and the extent to which it contributes to or detracts from isolation. For the purpose of determining the presence of the potentially adverse conditions, investigations shall extend from the surface to a depth sufficient to determine critical pathways for radionuclide migration from the underground facility to the accessible environment. Potentially adverse conditions shall be investigated outside of the postclosure controlled area if they affect isolation within the postclosure controlled area.

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(3) A description and analysis of the design and performance requirements for structures, systems, and components of the geologic repository that are important to safety. The analysis must include a demonstration that—(i) the requirements of § 60.111(a) will be met, assuming occurrence of Category 1 design basis events; and (ii) the requirements of § 60.136 will be met, assuming occurrence of Category 2 design basis events.

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(8) A description of the controls that the applicant will apply to restrict access and to regulate land use at the site and adjacent areas, including a conceptual design of monuments which would be used to identify the postclosure controlled area after permanent closure.

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§ 60.43 [Amended]

5. In § 60.43(b)(5), the term “controlled area” is revised to read “postclosure controlled area.”

§ 60.46 [Amended]

6. In § 60.46(a)(3), the term “controlled area” is revised to read “postclosure controlled area wherever it appears.”

§ 60.51 [Amended]

7. In § 60.51(a)(2)(i) and (a)(2)(ii), the term “controlled area” is revised to read “postclosure controlled area.”

§ 60.102 [Amended]

8. In § 60.102(c), the term “controlled area” is revised to read “postclosure controlled area.”

9. In § 60.111, paragraph (a) is revised to read as follows:

§ 60.111. Performance of the geologic repository operations area through permanent closure.

(a) *Protection against radiation exposures and releases of radioactive material.* The geologic repository operations area shall be designed so that until permanent closure has been completed, radiation exposures and radiation levels, and releases of radioactive materials to unrestricted areas, will be maintained within the limits specified in part 20 of this chapter and such generally applicable environmental standards for radioactivity as may have been established by the Environmental Protection Agency.

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§ 60.121 [Amended]

10. In § 60.121(a) and (b), the term “controlled area” is revised to read “postclosure controlled area.”

§ 60.122 [Amended]

11. In § 60.122(b)(6) and (c) introductory text, the term “controlled area” is revised to read “postclosure controlled area.”

12. Section 60.130 is revised to read as follows:

§ 60.130 General considerations.

Pursuant to the provisions of § 60.21(c)(2)(i), an application to receive, possess, store, and dispose of high-level radioactive waste in the geologic repository operations area must include the principal design criteria for a proposed facility. The principal design criteria establish the necessary design, fabrication, construction, testing, maintenance, and performance requirements for structures, systems, and components important to safety and/or important to waste isolation.

Sections 60.131 through 60.134 specify minimum requirements for the principal design criteria for the geologic repository operations area. These design criteria are not intended to be exhaustive, however. Omissions in §§ 60.131 through 60.134 do not relieve DOE from any obligation to provide such features in a specific facility needed to achieve the performance objectives.

13. In § 60.131, paragraph (b) is revised, and paragraphs (c) through (k) are added to read as follows:

§ 60.131 General design criteria for the geologic repository operations area.

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(b) *Protection against design basis events.* The structures, systems, and components important to safety shall be designed so that they will perform their necessary safety functions, assuming occurrence of design basis events.

(c) *Protection against dynamic effects of equipment failure and similar events.* The structures, systems, and components important to safety shall be designed to withstand dynamic effects such as missile impacts, that could result from equipment failure, and similar events and conditions that could lead to loss of their safety functions.

(d) *Protection against fires and explosions.* (1) The structures, systems, and components important to safety shall be designed to perform their safety functions during and after credible fires or explosions in the geologic repository operations area.

(2) To the extent practicable, the geologic repository operations area shall be designed to incorporate the use of noncombustible and heat resistant materials.

(3) The geologic repository operations area shall be designed to include explosion and fire detection alarm systems and appropriate suppression systems with sufficient capacity and capability to reduce the adverse effects of fires and explosions on structures, systems, and components important to safety.

(4) The geologic repository operations area shall be designed to include means to protect systems, structures, and components important to safety against the adverse effects of either the operation or failure of the fire suppression systems.

(e) *Emergency capability.* (1) The structures, systems, and components important to safety shall be designed to maintain control of radioactive waste and radioactive effluents, and permit prompt termination of operations and evacuation of personnel during an emergency.