

The Commission has revisited the decision to require submission of alternative designs. Specifically, the Commission no longer believes this information should be submitted with a license application and, accordingly, has removed this requirement. To protect public health and safety and the common defense and security, which is the NRC's mandate under the Atomic Energy Act of 1954 as amended, the Commission will closely scrutinize the design proposed by DOE. Consistent with this mandate, the new part 63 is designed to be a risk-informed, performance-based regulation which establishes overall repository performance objectives. DOE must demonstrate that the repository meets the performance objectives. The NRC review is an audit of DOE's demonstration to determine if we agree that the performance objectives have been met. If the NRC believes that the site does not meet the performance objectives within uncertainties addressed in the analysis, then it is DOE's responsibility to either defend its current design or propose an alternative design that can meet the NRC acceptance criteria.

Because thermal effects and the potential for water to contact the waste packages may be important considerations in the design of a potential high-level waste repository at Yucca Mountain, DOE would need to provide an assessment of the thermal operating range for a design in its license application. The NRC staff will determine, before docketing, whether the information provided is sufficient for NRC to conduct its review.

No changes have been made to the Yucca Mountain Review Plan in response to this comment.

5 Postclosure Period

5.1 Consistency With Postclosure Requirements in 10 CFR Part 63

Issue 1: Should the text in the postclosure sections of the Yucca Mountain Review Plan be modified to more closely reflect the language of 10 CFR part 63?

Comment. Several commenters identified places where the text of the Yucca Mountain Review Plan could be revised to better reflect the language of postclosure requirements in 10 CFR part 63, subpart L. One commenter noted several places where text should be modified to refer to the dose to the reasonably maximally exposed individual rather than more general terms such as average annual dose. Another commenter noted incorrect citations in Section 4.2.1.3.14.4 of the draft Yucca Mountain Review Plan. Additional comments indicated several locations where the draft Yucca Mountain Review Plan text on postclosure public health and environmental protection (Section 4.2.1.4) could be modified to be more

consistent with the requirements of 10 CFR part 63, subpart L.

Response. The text in the Yucca Mountain Review Plan should accurately reflect the language and intent of 10 CFR part 63.

The Yucca Mountain Review Plan has been modified, as appropriate, to provide correct references to the postclosure requirements in 10 CFR part 63. Text citations for the required characteristics of the reference biosphere [10 CFR 63.305(a–d)] have been corrected as needed. Also, text in Section 4.2.1.4 of the draft Yucca Mountain Review Plan has been modified to improve consistency between the review methods and acceptance criteria and the postclosure public health and environmental standards specified in 10 CFR part 63, subpart L.

Issue 2: Is the description of the representative volume consistent with NRC regulations in 10 CFR 63.312?

Comment. Several commenters stated that the use of a representative volumes of groundwater in Sections 4.2.1.3.12, "Representative Volume," and 4.2.1.4.3, "Analysis of Repository Performance that Demonstrates Compliance with Separate Ground-Water Protection Standards," of the draft Yucca Mountain Review Plan is not consistent with U.S. Environmental Protection Agency and NRC implementation regulations at 10 CFR part 63.

Response. Section 4.2.1.3.12 of the draft Yucca Mountain Review Plan confuses the concept of water demand for the postclosure individual protection standard with the concept of the representative volume of water for the postclosure ground-water protection standard.

The postclosure individual protection standard at 10 CFR 63.111 requires that DOE demonstrate the reasonably maximally exposed individual would receive an annual cumulative effective dose equivalent of no more than 150 microsieverts. Under 10 CFR 63.312(c), the reasonably maximally exposed individual will use "well water with concentrations of radionuclides based on an annual water demand of 3,000 acre-feet." 10 CFR part 63 also mandates use of the representative volume of water concept in demonstrating compliance with the separate ground-water protection standards. The definition of the representative volume of water also specifies a volume of 3,000 acre-feet per year; however, the applicant must also define the dimensions of this volume using one of two specified methods.

The Yucca Mountain Review Plan has been modified to clarify these requirements.

Issue 3: Are the review methods and acceptance criteria for evaluating the demonstration of compliance with the human-intrusion standard adequate?

Comment. One commenter stated that the review methods and acceptance criteria for evaluating the demonstration of compliance with the human-intrusion standard are not complete or consistent with NRC regulations at 10 CFR part 63. For example, the commenter expressed concern that the review methods in Section 4.2.1.4.2.1, "Demonstration of Compliance with the Human Intrusion Standard," of the draft Yucca Mountain Review Plan indicate that the review need only confirm that performance assessment for human intrusion is performed during the 10,000-year regulatory time period. The commenter also noted that, if the projected doses from an intrusion reach the reasonably maximally exposed individual after the 10,000-year regulatory time period, 10 CFR 63.321 requires DOE to include the results of the analysis and its basis in the Yucca Mountain environmental impact statement. The commenter also stated that the draft Yucca Mountain Review Plan does not call for DOE to identify the specific mechanism for radionuclide transport from a breached waste package to the saturated zone.

Response. The review methods in Section 4.2.1.4.2.2 of the draft Yucca Mountain Review Plan have been modified to clarify that the human-intrusion performance assessment should be conducted regardless of the estimated time of the intrusion. The review methods have also been modified to note that 10 CFR 63.321 requires that exposures to the reasonably maximally exposed individual that might result from human intrusion and occur after the 10,000-year regulatory time period are to be included in the Yucca Mountain environmental impact statement. In addition, the regulations at 10 CFR 63.322 require that DOE consider the transport of radionuclides in ground water through the borehole to the saturated zone. The Yucca Mountain Review Plan, however, is guidance for NRC staff safety review and will not be used to review DOE's environmental impact statement. Environmental reviews would be performed according to the requirements of 10 CFR 51.109, and applicable guidance.

The review methods in Section 4.2.1.4.2.2 of the draft Yucca Mountain Review Plan have been modified for clarification.