

assess these judgments. NRC staff has revised sections of the Yucca Mountain Review Plan that contain an excessive level of detail, particularly those sections dealing with repository design and NRC assumptions about the relative importance of specific features, events, and processes. The Yucca Mountain Review Plan recognizes that risk-informed, performance-based principles are especially important in a step-wise licensing process.

Some specific comments, however, were not incorporated.

Regulations at 10 CFR part 63 were specifically written to implement a risk-informed, performance-based approach to licensing. Quantitative performance measures for the repository are found in the radiation health and protection standards that are implemented in 10 CFR part 63. In addition, 10 CFR part 63 specifies use of multiple barriers, performance confirmation, and other requirements in demonstrating performance. There are some techniques, programs, and guidance for regulating the use of radioactive material, however, that have proven to be efficient and effective for a wide range of licensees and that were adopted in 10 CFR part 63. Among these areas are operational health physics, material control and accountability, and emergency preparedness. For these reasons, the Yucca Mountain Review Plan does not reflect major changes in the way these programs would be implemented at other facilities regulated by NRC.

An applicant may propose approaches to areas such as operational health physics, physical protection, material control and accountability, and emergency preparedness that depart from those outlined in the guidance of the Yucca Mountain Review Plan. If DOE otherwise demonstrates it satisfies regulatory requirements, that is, that the public health and safety, as well as the environment, would be protected, NRC staff would find those approaches acceptable.

Section 4.2.1.3, "Model Abstraction," of the draft Yucca Mountain Review Plan is lengthy and somewhat redundant, but was structured to best reflect how NRC staff would conduct its licensing review. Each of the 14 model abstractions has its unique technical and regulatory issues. Although the five generic acceptance criteria are applicable to each of the model abstraction reviews, for the convenience of the reviewer, the review procedures and acceptance criteria are listed separately for each model abstraction. Accordingly, the multidisciplinary team that conducts each model abstraction

review will be able to use a separate section of the review plan.

In summary, changes have been made throughout the Yucca Mountain Review Plan to more effectively implement a risk-informed, performance-based licensing review, but brevity has not been the primary goal.

*Issue 2:* To what extent should NRC staff rely on the applicant in developing risk insights?

*Comment.* One commenter noted that findings of compliance or noncompliance will need to be substantiated, suggesting that NRC staff performs a detailed review or a simplified review of a particular feature will be decided by how important DOE's safety analysis considers the feature to be to the overall repository performance. On the other hand, the Yucca Mountain Review Plan contains language that suggests that the scope of the review will be determined in part by what DOE deems important, but also in part by risk insights developed by NRC staff from using its own knowledge of the site and its own analyses of performance assessment models. The commenter strongly favored the latter approach.

The commenter urged NRC staff not to be guided solely by the applicant on the depth of the review of an application and to continue to build agency insights about important contributors to risk at the proposed repository.

*Response.* One purpose of the Yucca Mountain Review Plan is to provide guidance to NRC staff on how to conduct a risk-informed, performance-based licensing review for a potential high-level waste repository at Yucca Mountain. The review plan, as revised, clarifies that the risk-informed, performance-based review, is not dictated solely by DOE.

*Issue 3:* How will risk-informed, performance-based principles be applied in a Yucca Mountain licensing review?

*Comment.* Several comments addressed the use of risk insights, to focus the review on those areas most important to repository performance. One commenter asked how NRC would decide which areas are most important to repository performance, and how the extent of the review of a given portion of the license application would be determined.

One commenter noted that Section 4.2.1.2.2, "Identification of Events with Probabilities Greater Than  $10^{-8}$  Per Year," of the draft Yucca Mountain Review Plan does not mention the risk-informed, performance-based review approach, and suggested that this section should be combined with

Section 4.2.1.2.1, "Scenario Analysis," of the draft Yucca Mountain Review Plan.

Another commenter asked whether NRC staff was aware that DOE's results were being probability weighted.

*Response.* Practical experience in conducting iterative performance assessments for the Yucca Mountain site has provided NRC staff with valuable insight regarding areas that are most likely to be important to health and safety. Until DOE submits a license application, however, it is premature to identify those areas of the postclosure performance assessment that would require the most detailed review. The review of DOE's scenario analysis and event probability described in Section 4.2.1.2 of the draft Yucca Mountain Review Plan would provide an initial foundation for focusing on credible events affecting repository performance. The review methods and acceptance criteria in Section 4.2.1.3, "Model Abstraction," of the draft Yucca Mountain Review Plan provide a mechanism for evaluating the different sections of DOE's postclosure performance assessment. NRC staff would focus its review accordingly based on information in the DOE application and the areas that are most important to health and safety.

The concept of a risk-informed, performance-based review has been reiterated in this section and the text has been modified to clarify that establishing a probability range is an aspect of a risk-informed approach.

Section 4.2.1.2.2 has not been combined with Section 4.2.1.2.1. Section 4.2.1.2.2 addresses the specific requirements of 10 CFR 63.114(a)(4), and Section 4.2.1.2.1 addresses the specific requirements of 10 CFR 63.114(a)(5) and (6).

NRC staff review will determine whether probability weighting of results is mathematically and technically used appropriately in the license application.

Section 4.2.1.2.2 of the Yucca Mountain Review Plan has been clarified and modified in response to this comment.

#### 9.6 Use of Guidance and Experience From Regulating Other Nuclear Facilities

*Issue:* To what extent should NRC rely on guidance and experience from regulating other nuclear facilities when evaluating a license application for a potential high-level waste repository at Yucca Mountain?

*Comment.* One commenter expressed concern that, because 10 CFR part 63 does not have performance objectives for administrative and programmatic