



UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

June 11, 1992

MEMORANDUM FOR: The Chairman
Commissioner Rogers
Commissioner Curtiss
Commissioner Remick
Commissioner de Planque

FROM: James M. Taylor
Executive Director
for Operations

William C. Parler
General Counsel

SUBJECT: RESOLUTION OF THE REGULATORY UNCERTAINTIES RELATED TO THE
RELATIONSHIP OF THE HIGH-LEVEL WASTE REPOSITORY REGULATIONS'
SITING CRITERIA AND THE PERFORMANCE OBJECTIVES

This memorandum is in response to Staff Requirements Memorandum (SRM) 9200219, resulting from the March 17, 1992, briefing to the Commission on activities of the Center for Nuclear Waste Regulatory Analyses (CNWRA). In the SRM, the Commission asked the staff to provide it with a description of the staff and CNWRA interpretations of the relationship between the siting criteria in 10 CFR 60.122 (defined in terms of potentially adverse and favorable conditions) and the performance objectives in 10 CFR 60.112 and 10 CFR 60.113. In addition, the SRM requested a discussion of an approach, that would resolve this issue.

The differing interpretations were associated with the terms "adequately investigated" and "adequately evaluated," both of which are associated with the evaluation of the potentially adverse conditions in 10 CFR 60.122. These terms were identified as regulatory uncertainties because it was not clear how compliance with them could be demonstrated. In addition, the CNWRA's interpretation was that the effect of each individual potentially adverse condition on performance was called for by 10 CFR 60.122(a)(2), and therefore, 10 CFR 60.122(a)(2) was a separate regulatory requirement independent of the performance objectives in 10 CFR 60.112 and 10 CFR 60.113. The Center concluded that even if compliance was demonstrated with 10 CFR 60.112 and 10 CFR 60.113, additional demonstrations of compliance would be necessary to address the potentially adverse conditions in 10 CFR 60.122(c).

Based on a review of the uncertainties, the staff and the CNWRA agreed that the uncertainties related to the terms "adequately investigated" and "adequately evaluated" could be reduced through regulatory guidance. However, agreement

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was not as easily reached on the overall relationship between 10 CFR 60.122 and the performance objectives based on the existing language in 10 CFR Part 60. The staff took the position that the Statement of Consideration was clear that the potentially adverse conditions would be acceptably addressed if the Department of Energy could demonstrate that it had considered them, in combination with favorable conditions and the engineered barrier system (as described in 10 CFR 60.122(a)) in the demonstration of compliance with the applicable performance objectives. The staff's position was based on its understanding of the Commission's intent that this approach better reflects the natural integration of processes and events and their combined impact on performance of the site. Although the CNWRA did not object to the staff's position, it believed that the regulations should be revised to ensure a singular interpretation.

In order to resolve the issue, the staff (including the Office of the General Counsel) and the CNWRA held a number of meetings to reach agreement on the relationship of 10 CFR 60.122 and the performance objectives. These meetings resulted in agreement on the question of the interrelationship. The staff and the CNWRA then developed proposed regulatory uncertainty-reduction language that would address the issue, and allow the staff and CNWRA to proceed with subsequent work. The proposed language places all analysis requirements in 10 CFR 60.21, which is consistent with the other technical aspects of the rule. It also revises 10 CFR 60.122 to make it clear that if the siting criteria are appropriately considered in the compliance demonstration for the performance objectives, then a separate assessment is not necessary for performance of individual potentially adverse conditions. A copy of that proposed language is enclosed. The staff is currently analyzing the implementation of this language to determine if it is acceptable, as written, for a proposed rule change, or if minor modifications are necessary. The Executive Director for Operations has directed the staff to begin the necessary work to prepare a proposed rulemaking for Commission consideration, once this analysis is complete.

James M. Taylor
Executive Director
for Operations

William C. Parler
General Counsel

Enclosure:

Proposed Rulemaking Language

cc: Secy, OGC

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POSTULATED UNCERTAINTY REDUCTION LANGUAGE CLARIFYING
THE RELATIONSHIP BETWEEN 10 CFR 60.122 AND 10 CFR 60.112 AND 113

60.21 (c)(1)(ii) The assessment shall contain:

(A) An analysis of the geology, geophysics, hydrogeology, geochemistry, climatology, and meteorology of the site.

(B) Analyses to determine the degree to which each favorable condition and potentially adverse condition enumerated in section 60.122 of this part has been characterized and has been found to be present. For each potentially adverse condition, the analysis shall demonstrate either its absence or the extent to which it may be present and still be undetected, taking into account the degree of resolution achieved by the investigations. 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 controlled area if they may affect isolation within the controlled area.

(C) An evaluation of the performance of the proposed geologic repository for the period after permanent closure, assuming anticipated processes and events, giving the rates and quantities of releases to the environment as a function of time; and a similar evaluation which also assumes the occurrence of unanticipated processes and events. The evaluations shall be sensitive to any of the potentially adverse conditions and favorable conditions enumerated in section 60.122 of this part that have been determined to be present. In examining any potentially adverse condition that has been determined to be present, assumptions should be used that are not likely to underestimate its effects. The evaluations must demonstrate that, considering the potentially adverse conditions in combination with other characteristics of the site and design, the performance objectives relating to the isolation of the waste as set out in sections 60.112 and 60.113 of this part will be met.

60.122 Siting criteria.

(a)(1) A geologic setting shall exhibit an appropriate combination of the conditions specified in paragraph (b) of this section so that, together with the engineered barrier system, the favorable conditions present are sufficient to provide reasonable assurance that the performance objectives relating to isolation of the waste (as set out in sections 60.112 and 60.113 of this part) will be met.

(a)(2) The presence of potentially adverse conditions must not compromise the ability of the geologic repository to meet the performance objectives relating to isolation of the waste.

(b) favorable conditions.....

(c) potentially adverse conditions....

ENCLOSURE