



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

JUN 30 1999



OFFICE OF AIR AND RADIATION

Mr. John Greeves, Director  
Division of Waste Management  
Mail Stop 7J9 TWFN  
Office of Nuclear Materials Safety and Safeguards  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555-0001

DOCKET NUMBER  
PROPOSED RULE PR 2, 19, 20 et al.  
(64FR8640)

Dear Mr. Greeves:

I am writing to provide the comments of the Environmental Protection Agency (EPA) on your proposed rulemaking entitled, *Disposal of High-Level Radioactive Wastes in a Proposed Geologic Repository at Yucca Mountain, Nevada*, which was published in the *Federal Register* on February 22, 1999.

The comments are enclosed. You will find two sections of comments, general and specific. The general comments contain policy discussions or comments on items which appear often in the *Federal Register* notice. The specific comments are centered upon particular provisions. Our comments are based upon our experience as the only regulatory agency to have ever licensed a geologic repository. We believe the Nuclear Regulatory Commission (NRC) standard as currently written is not protective. This will increase public confidence in NRC's licensing decision.

As has been expressed by the Administrator, we are very concerned about the Nuclear Regulatory Commission's (NRC) decision to go forward with its proposed regulations prior to EPA establishing the health and safety standards for Yucca Mountain. The Energy Policy Act of 1992, provided for a sequential process in which EPA was to set the public protection standards, then NRC was to promulgate licensing regulations which included these standards. As a minimum, NRC, as requested by the Administrator, could have left blank sections such as individual protection limits which will be included in EPA's standards. As the Administrator predicted in her October 23, 1998, letter to Chairman Jackson, the NRC's action have confused the process and is confusing the public. Once again, we urge you to not take further action on these implementing regulations until EPA has established the standard to be implemented.

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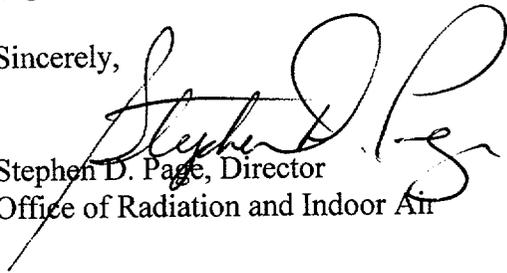
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If you have any comments or questions regarding our comments, please contact Ray Clark at 202-564-9198 or [clark.ray@epa.gov](mailto:clark.ray@epa.gov).

Sincerely,



Stephen D. Page, Director  
Office of Radiation and Indoor Air

Enclosure

**THE ENVIRONMENTAL PROTECTION AGENCY'S COMMENTS**  
**UPON**  
**THE NUCLEAR REGULATORY COMMISSION'S PROPOSED 10 CFR PART 63**  
***DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN A GEOLOGIC REPOSITORY***  
***AT YUCCA MOUNTAIN, NEVADA***

GENERAL COMMENTS

1. The Commission has not proposed standards specifically for the protection of ground water from contamination caused by releases from Yucca Mountain. Ground water is a valuable resource with many potential uses. The National Academy of Sciences (NAS) clearly identified, in its 1995 report, *Technical Bases for Yucca Mountain Standards*, the ground water pathway as the significant pathway of exposure in the vicinity of the Yucca Mountain site (NAS Report pp. 52 and 81).

It is the policy of this and previous Administrations that the ground water of the United States is to be protected to the drinking water standards, also known as maximum contaminant levels (MCLs). For example, the Administrator, in testimony approved by the Office of Management and Budget on Superfund reauthorization, has supported protection of ground water to the MCLs. Since 1991, our policy has been to protect ground water that is being used or might be used as drinking water by restricting potential future contamination. This policy means that polluters must cleanup contaminated ground water and potential polluters must protect clean ground water sources of drinking water. Experience shows that it is cheaper to prevent contamination than it is to clean it up. Ground water contamination is also of concern to us because of potential adverse impacts upon ecosystems, particularly sensitive or endangered ecosystems. This is particularly applicable in the arid setting south of Yucca Mountain under which the ground water is thought to flow. The aridity makes the many water consumers in that

area, including those in domestic, agricultural, and sensitive-ecosystem settings, completely dependent upon this ground water, i.e., it is their sole source of water.

The overall goal of our ground water protection strategy is the prevention of adverse effects upon human health and the environment by protecting the environmental integrity of the Nation's ground water resources. We believe that it is important to protect ground water to preserve the Nation's currently used and potential underground sources of drinking water (USDWs) for present and future generations. Since the goal of ground water protection is to ensure that potable ground water resources, such as those under Yucca Mountain and Amargosa Valley, remain potable, the only logical standard is to ensure that the ground water meets the Nation's drinking water standards, i.e., the maximum contaminant limits (MCLs). The NRC's failure to do so does nothing more than transfer the costs and risks of cleaning contaminated ground water from polluters to innocent future users. Such transfer of costs and risk is obviously inequitable.

The EPA employs maximum contaminant limits (MCLs) to protect ground water which is subject to numerous regulatory programs. This approach is contained in our regulations pertaining to nationwide hazardous-waste disposal (40 CFR Part 264), municipal-waste disposal (40 CFR Parts 257 and 258), underground injection control (UIC) (40 CFR Parts 144, 146, and 148), generic spent nuclear fuel and high-level and transuranic radioactive waste disposal (40 CFR Part 191), and uranium mill tailings disposal (40 CFR Part 192). These programs demonstrate that such protection is scientifically and technically achievable within the constraints applied in each of these regulations ("Progress In Ground Water Protection and Restoration," EPA 440/6-90-001). With these other applications of the MCLs, the omission of ground water standards for Yucca Mountain would undermine public confidence that the disposal system is safe and that the regulatory authority has adopted a protective stance. The Commission has stated that it believes that their proposed dose limit is sufficiently protective of large populations since the critical group is being protected. However, individual protection standards are not designed to be, nor are they, based upon an acceptable level of risk for large populations. This is especially true of proposed Part 63 which is not sufficiently protective of individuals. Therefore, to protect both the resource and the people which depend upon this source of ground water, a

limit based upon an individual dose is insufficient. Separate ground water standards need to be in place to protect the ground water of Amargosa Valley, a resource capable of supplying drinking water to 250,000 people.

Finally, the Nation should provide the people of Nevada at least the same level of protection that is provided to everyone else at every other waste disposal and Superfund site. While there may be differences in how the standards are applied, in its regulatory actions, we always protect ground water which is accessible to the public to the MCLs. The only exception is when it is technically impractical to do so and then alternative water sources are provided. To not require separate ground water protection could be seen as an admission that acceptable containment of the waste is technically impractical.

Therefore, we urge the Commission to include specific ground water protection standards.

2. Our generic disposal standards in 40 CFR Part 191 require that compliance be demonstrated with "reasonable expectation." As in your 10 CFR Part 60 regulations, your *Federal Register* notice contains a discussion of the NRC concept termed "reasonable assurance." We believe that the connotation which has developed around "reasonable assurance" could lead to an extreme approach to selecting worst case values for important parameters, for example, precipitation rates, seepage rates, and flow in the unsaturated zone, coupled with an equally extreme approach in selecting engineered barrier performance factors would lead to assessments that represent situations with little or no probability of occurring but which become the basis for licensing decisions. It appears that NRC's use of reasonable assurance is what is driving NRC to set unprotective standards.

The concept of "reasonable assurance" has been developed by NRC in its nuclear power plant licensing program. Of course, nuclear power plants operate under active institutional controls during their entire lifetimes. However, those lifetimes span only a few decades, a circumstance in which "reasonable assurance" is appropriate. However, for a system such as Yucca Mountain, the performance of which will be judged using time frames of thousands of years or more, it is unreasonable to hold projections of performance, with their inherently large

ranges of uncertainty, to the strict standards of operating nuclear power plants. That is why we purposely used the term "reasonable expectation" in 40 CFR Part 191 -- to differentiate our intention from the NRC's "reasonable assurance." Although our intent is similar, "reasonable assurance" has come to be associated with a level of confidence that is not appropriate for the very long-term analytical projections that will be necessary for Yucca Mountain.

It is likewise not necessary to apply margins of safety beyond the EPA's standards in an effort to assure compliance. We will develop our standards through a public participation process and the final standards will indicate the appropriate level of confidence to constitute compliance with our standards based upon input received from that public process. The Commission should not feel compelled to, in effect, alter those standards.

As the Commission is aware, the NAS stated many times in its report that it will be necessary to make assumptions while attempting to project the performance of the disposal system. The NAS then urges that those assumptions be "cautious, but reasonable." We believe that there are areas in the proposed Part 63 where this may not be the case. This is related to the previous comment wherein the standard of judgment is "reasonable assurance" rather than "reasonable expectation." We provide more comments on those areas in the "Specific Comments" section below.

3. We find that a 25-millirem annual dose limit is not sufficiently protective. The lifetime risk of a fatal cancer at that level is about 5 in 10,000. This is inconsistent with the NAS recommended starting point for setting the standard which is equivalent to a range of 2 to 20 millirem per year. The Commission points to 40 CFR 191.03(a) as support for its proposed 25-millirem annual dose limit. As NRC is well aware, the EPA standard are the annual limits of 25 millirem to the whole body, 75 millirem to the thyroid, and 25 millirem to any other organ. With many radionuclides, the organ dose is controlling. For example, two of the radionuclides of greatest concern at Yucca Mountain are iodine-129 and technetium-99. Using the 25 millirem whole body dose as the basis, the potential doses from iodine-129 would be about 800 millirem effective dose equivalent (ede) (mainly to the thyroid) and about 80 millirem ede from technetium-99 (mostly to the colon). As these examples clearly demonstrate, the NRC's comparison is technically inaccurate and should be corrected in the future. It should also be

pointed out that EPA's individual dose limits for disposal, which are given later in those same standards (§191.15) is 15 millirems per year. This limit includes later dose effectiveness information and dose assessment methodologies. This is also a committed dose rather than an annual dose, as in the management and storage standards. Therefore, the NRC's proposed dose limit is not "as consistent" with other regulations as it might first seem, unless one depends upon outdated science. In addition, we are in the process of updating 40 CFR 191.03 to the newer methods and information.

4. The EPA encourages the Commission to pursue its inclination "to provide for informal hearings." It is our understanding that the licensing process which the Commission currently envisions is parallel to those proceedings used to license nuclear power reactors. We return again to our previous comment on "reasonable assurance" and "reasonable expectation." We believe that it is much more productive to be able to consider all sides of arguments and accept judgments and opinions from authoritative sources which are well substantiated but not necessarily incontrovertibly provable. Of course, incontrovertible proof is always preferable but is not always possible. Therefore, the licensing board and the Commission should have some degree of freedom to decide that a factor is acceptable, unacceptable, or partially acceptable, without incontrovertible proof. Without this latitude, assumptions and parameter values used in performance assessments are likely to be driven to extremes. The results of these assessments are then projections for highly unlikely circumstances rather than a distribution of anticipated actual performance.

5. We believe that it would be helpful for the Commission to consider increasing its public outreach. The sessions which NRC held in Nevada in March of this year are a good example. In the process of certifying WIPP, we conducted a variety of outreach activities which provided us a sense for the concerns of the public outside of the administrative hearing process.

6. We are concerned about the apparently open-ended nature of several of the provisions. The specific instances are given below in the Specific Comments section, e.g., numbers 10, 14,

15, 17, 25, 29, and 33. We ask the Commission to reexamine the proposal for areas which should be more specific as to DOE activities allowed and the roles and authority which NRC plans to take, including the bases for these provisions.

7. There needs to be specific and defined provisions for updating the performance assessment as site characterization proceeds. If NRC grants the license to possess radioactive material, the performance assessment needs to be updated as the design changes and when further data are found. This goes beyond the reporting requirements in § 63.132. These provisions would set a threshold past which a formal compliance review would be required. The establishment of this threshold should be subject to public rulemaking.

8. We were not able to find specification of environmental monitoring and the methods of enforcement of the pre-closure requirements. There should be such a program together with specified verification methods and enforcement provisions.

9. There are many references, e.g., in § 63.21(c)(18), to decontamination or dismantlemen.. This implies that if facilities are to be dismantled, they do not need to be decontaminated. Please explain why this is acceptable or clarify this so that this interpretation is not possible, i.e., slightly lengthen the phrase to “decontamination or decontamination and dismantlement.”

### Specific Comments

1. P. 8642, subparagraph (6): The summary of this NAS conclusion is incomplete in an important way. The complete conclusion stated that: “Specifying exposure scenarios therefore requires a policy decision that is appropriately made in a rulemaking process conducted by EPA.” (p. 10 of the NAS Report; also referenced on p. 99) The conclusion as summarized in the Part 63 preamble gives the impression that the NAS did not identify who was to specify the scenario as

long as it was established through a public rulemaking process. The incomplete summary of the NAS conclusion should not be used or implied to be a basis for the Commission to set the exposure scenario. The Commission needs to accurately portray the conclusion to avoid further public confusion over the roles of our agencies.

2. P. 8644, footnote: There is much left unexplained in this footnote. What is the basis of the policy which finds that the proposed dose limit (using effective dose equivalent) is “within the range of potential doses” in the current 10 CFR 72.104 which is based upon the old “critical organ” dose system? For example, 10 CFR 72.104 limits thyroid dose to 75 millirem per year. However, 25 millirems total effective dose equivalent allows over 800 millirems to the thyroid. How is this in the “range of potential doses represented by the current 10 CFR 72.104?”

It is also noted, without explanation, that natural background is three times the NRC’s public dose limit and “12 times the standard proposed for Yucca Mountain.” The NRC should remove this sentence or explain why the level of background radiation to which all people are exposed justifies any polluter being allowed to increase the risk to the people of Nevada.

3. P. 8645, bottom of the second column: The Commission states that there are “farming activities” in the Yucca Mountain region and that farming creates a “relatively large demand for ground water.” The inference is that the proposed scenario is reasonable. The Commission continues by briefly explaining the relationship between ground water depth and economics, eventually arriving at the conclusion that the 20-kilometer location is “reasonably conservative.”

Another possible scenario at the 20-kilometer location is a small residential community, with some limited farming. Since this scenario would not have the need for large amounts of water that current commercial agricultural operations would, this scenario seems more plausible and reasonable. This scenario could also be more cautious in that the lower demand for water would entail less dilution, since it should be assumed that the center of the plume is tapped by the community water supply. This is a scenario which appears to be more cautious and reasonable than the proposed scenario and is more consistent with the current land use patterns and restrictions, as well as near-term future land use projections.

Later in the preamble, there is a discussion of the need to withdraw the entire plume and, by implication, most of the annual water yield of the aquifer, in order to estimate concentrations. There is no justification for this approach other than to dilute releases from the repository. We believe that concentrations in the ground water can be estimated in volumes of water needed by much smaller agricultural and domestic demands. We have not yet determined particular amounts; however, those under consideration are certainly smaller than the current demands of the entire agricultural activity occurring in Amargosa Valley.

In addition, the contention that the concentration of contaminants in the ground water can be derived by simply dividing the annual release rate from the repository by the annual water demand makes it unnecessary to understand the ground water flow system below and down gradient from the repository -- only a release from the engineered barrier system is needed along with a selection of an annual water demand for the farming community. The challenge in demonstrating that disposal is safe is to be able to assess with "reasonable expectation" what releases from the repository are expected and where they are likely to go. It will severely limit the confidence that we can place in the performance of the disposal system and value of the natural barrier at the site, if, after 10 years of extensive site characterization of the Yucca Mountain site, postclosure dose assessments can be made only by eliminating the need to at least basically understand the migration of radionuclides into and through the ground water system.

We also see no need to estimate the concentrations "at any particular, randomly selected withdrawal well." Attempting to define what percentage of wells tap a contamination plume, how many fractures are intercepted by a given well, the relative yield from each fracture, and whether the fracture yields clean or contaminated water, are assessments best avoided as they are either arbitrary or fundamentally unknowable. Therefore, for a regulatory compliance analysis, we believe that it is cautious and reasonable to assume that the well(s) supplying the water demands for the defined receptor(s) tap the center of the contamination plume. Averaged hydrogeologic parameters controlling the movement of a contamination plume, as defined by site characterization activities, will be used to define the downgradient flow system. Standard well-hydraulics calculations can be applied to provide cautious, but reasonable, assessments of the contamination in the withdrawn ground water which is then used as the source term for transport

through the biosphere pathways in the dose analyses. This approach allows the hypothetical well to be placed within the calculated path of the plume rather than trying to place a well at a fixed location and trying to determine the likelihood of the plume passing that point. In this way, it is not necessary to pump the entire aquifer to be certain of intercepting the plume.

A separate, but related issue, is that the amount of contaminated food consumed by the critical group is vague in that it assumes all locally grown food is contaminated, but Part 63 does not explicitly state that all the food consumed by the critical group is locally grown. Assuming that all food consumed is contaminated makes the farming community essentially a group of subsistence farmers, similar to the NAS minority recommendation, but this is not acknowledged in the draft text. From considerations of the potential size of the contamination plume and the number of farms and their average size, it would appear unreasonable and excessively conservative to assume that all locally grown food is contaminated. Surveys of the population of Amargosa Valley indicate that some of the food consumed there is from sources outside of their local area.

4. P. 8646: We do not believe that the “evolution of the geologic setting” is part of the reference biosphere. That is more appropriately included in the quantitative performance assessment.

5. P. 8647: The Commission once again implies a concept which misuses an important fact. The Commission discusses the radioactive decay of the waste inventory proposed for Yucca Mountain in which it states that after 10,000 years the “radiologic hazard is within a factor of ten of the hazard posed by a quantity of 0.2 percent uranium ore [and] is equivalent to that which was necessary to produce the spent fuel.” The implication is that since the waste eventually returns to a “natural” condition, there should not be a large concern about it. However, what is left unsaid is that there is not now, and never has been, a uranium body present in Yucca Mountain. Therefore, rather than implying that the waste returns to something of a benign “natural” condition, the Commission should indicate that this is a new risk which is being added to the baseline risk of the local population. It is not to be dismissed on the basis of it being

“natural” or implied that drinking ground water that leaches through a natural uranium ore body is a harmless activity.

6. P. 8651, first column: It is unclear what the Commission means when it says the Nuclear Waste Policy Act (NWPA) was revisited in 1992. This is irrelevant since the Act was not amended.

7. P. 8664, § 63.2: The precise meaning of “expected,” in the definition of “expected annual dose,” needs to be given. Is “expected” the mean or median of a distribution of annual doses or some other statistical measure?

8. P. 8665, § 63.2: The definition of “high-level radioactive waste or HLW” traditionally has been limited to subsections (2) and (3) of the proposed definition. This has been codified in law, such as the Nuclear Waste Policy Act (NWPA) of 1982. The Commission’s proposed definition includes “irradiated reactor fuel,” another term that has been separately defined as “spent nuclear fuel” in the NWPA. Having a new definition of high-level radioactive waste that includes both spent nuclear fuel and reprocessed defense waste is likely to create confusion, given the separate definitions of these terms in law and EPA’s generally applicable standards for spent nuclear fuel, high-level and transuranic radioactive wastes (40 CFR Part 191). It would be better to use your proposed term “radioactive waste” in which to include HLW, irradiated reactor fuel, and other waste, than to introduce another definition for an already overly defined term.

9. P. 8665, § 63.2: Within the definition of “performance assessment” is the phrase “the average member of the critical group.” There needs to be a definition of “the average member.” Does the Commission mean the average dose within the critical group? If so, it should be stated in that manner rather than implying some social and economic components. Also, the NRC should justify why a standard that allows for some people to get above-average doses, i.e., doses above 25 millirem per year, is still protective for all individuals.

10. P. 8666, § 63.6: The Commission must state that this section does not apply to dose limits or other requirements specified in 40 CFR Part 197.

11. P. 8666, § 63.7(a): We are concerned that without limitations on this provision, DOE could take any types and amounts of radioactive materials into the site if it claimed that the materials were for site characterization activities. You should remove this subsection. We have no objection to § 63.8(b).

12. P. 8667, § 63.16(a): This is related to the previous comment. In this case, the Commission needs to specify the bases or criteria for determining if the use of radioactive material for site characterization is necessary. Without some basis for judgment, it could appear that such decisions are arbitrary and capricious.

13. P. 8668, § 63.21(c)(1)(iv): There should also be information regarding the hydrology, geology, and climate at and near the chosen location.

14. P. 8669, § 63.21(c)(15): The terms “active institutional controls” and “passive institutional controls” need to be defined along with an expected period of performance. In addition, a discussion of active and passive institutional controls and the NRC’s expectations of them should be added to the preamble.

15. P. 8669, § 63.22(d): Where are the “appropriate locations” and what criteria will you use to establish them?

16. P. 8669, § 63.24(b)(1): This should include “climatological,” as well.

17. P. 8669, § 63.24(c): The terms “substantial” and “significant” need to be defined.

18. P. 8669, § 63.21(c): The Commission must state that provisions contained in 40 CFR Part 197 are not to subject to considerations of cost/benefit. The Energy Policy Act requires us to set the environmental standards and the Commission to incorporate them into its licensing regulations. There is no authority for the Commission to apply our standards in any other fashion than as we promulgate them. This section could be interpreted to say that as a result of cost/benefit analysis, our standards could be applied in any manner the Commission sees fit. This is not appropriate.

19. P. 8671, § 63.41(c): Why is the term “unreasonable risk” used? This would be much clearer with a reference to the established dose limits and other requirements.

20. P. 8671, § 63.42: What is the basis for judging what is necessary for “common defense and security?”

21. P. 8672, § 63.51(a)(1): This subsection should require that the data gathered during the performance confirmation program, defined in Subpart F, be included in the update.

22. P. 8672, § 63.51(a)(2): We agree that post-closure monitoring needs to be required. However, as currently written, the post-closure monitoring program is undefined. If the Commission has not yet formulated such plans since there is not yet a final design for the disposal system, this should be recognized by the Commission. At the minimum, the Commission should require DOE to propose the nature and extent of post-closure monitoring in the application for license termination, subject to approval by the Commission. The Commission should also request public suggestions for the purpose and methods of monitoring. In the event that the Commission decides to impose monitoring requirements, those requirements should be subject to public rulemaking at that time.

23. P. 8672, § 63.51(a)(3)(iii): What is the purpose of having any other requirements if this is to be enforced? How does the Commission plan to assure that DOE will carry out this

program for the next 10,000 years? If the performance assessments show that expected doses exceed the standards, will the Commission assume that DOE will be present to “prevent any activity” that would result in a violation? If not, on what basis could it be denied if this provision is finalized?

24. P. 8672, § 63.61(a): The proper implementation of these standards is a significant concern for us. Therefore, we request that you include EPA in the list of parties to be notified.

25. P. 8673, § 63.72(a): The term “future generations” needs more specificity or a definition. Also, there is not an obvious, clear link between this requirement and the requirement in § 63.51(a)(2). Why do construction records apply to post-permanent closure monitoring more so than any other factor?

26. P. 8673, § 63.74(a)(1): This provision and that in § 63.7 are related. The ambiguous permission to perform tests with radioactive waste is not specific. There is no specification of: (1) where these tests may take place; (2) the types of waste; or (3) the amount of waste. These factors must all be defined. We are concerned that, without predefined limitations, DOE could take any types and amounts of radioactive materials into the site if it claimed they were to be used for site characterization activities.

27. P. 8674, § 63.102(b)(2), (3), and (4): These subparagraphs are confusing. The concepts of “storage” and “disposal” should not be mixed. Please consult the definitions in 40 CFR Part 191 and then provide the following to help clarify this section:

- a definition of “underground structure;”
- a definition of “storage;”
- deletion of the phrase “(which includes disposal)” within the longer phrase, “storage (which includes disposal).” The concepts in the Yucca Mountain project are difficult enough without confusing storage with disposal.

- an explanation of why, “The exercise of Commission authority requires that the geologic repository operations area be used for storage....”

28. P. 8677, § 63.113(d): While we agree that an intrusion scenario should include the penetration of a waste canister, we believe that assuming the time of occurrence to be just 100 years after closure is not “cautious, but reasonable” but simply unrealistic and, therefore, not reasonable.

29. P. 8677, § 63.114(e): In the phrase, “the resulting expected annual dose would be significantly changed by their omission,” there must be more specificity as to what constitutes “significantly.” How is the public or the licensing board to know what is meant by this undefined term?

30. P. 8678, Subpart G: We have several concerns regarding the proposed quality assurance (QA) requirements:

- There are no requirements to provide for the qualification of data that existed prior to the implementation of QA programs. This was an important issue for the WIPP compliance project and would be expected here as well. Such requirements need to be established;
- There should be a provision for NRC to conduct audits to verify the proper execution of QA programs. There should not be a strict reliance upon DOE to implement the program properly;
- As proposed for 10 CFR Part 63, NRC’s generic regulations for geologic repositories in 10 CFR Part 60 invoke Appendix B of 10 CFR Part 50 which is similar to the NQA-1 standard. It is proper to use Appendix B since it is a general standard that provides all of the QA elements. However, it is improper to apply Subpart G of 10 CFR Part 72 because it is specific to spent nuclear fuel storage and may not have all the QA elements needed for Yucca Mountain. Another difficulty with Appendix B is that it is weak regarding

computer software QA. The NRC should use NQA Part 2.7 or a similar standard for software QA; and

- The applicability of the QA programs is not clear. What does “safety” include? We believe that the QA program is applicable to all items and activities important to the isolation of radioactive waste in Yucca Mountain. The applicability must be clear. We suggest adding the following to § 63.142: “inspection of all items and activities that are important to the management and containment of waste in the disposal system.”