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August 9, 2002

Mr. Michael T. Lesar, Chief  
Rules Review and Directives Branch  
Division of Administrative Services  
US Nuclear Regulatory Commission  
Mail Stop T-6D59  
Washington DC 20555

Dear Mr. Lesar:

Please find attached to this letter the State of Nevada's comments on NUREG-1804, Revision 2, Yucca Mountain Review Plan. Our comments are divided into two parts: 1) General Comments that deal with the review process and the total document; and 2) Specific Comments that are listed by section and page of the Review Plan.

We believe that 10 CFR Part 63, the regulation upon which this review plan is based, is an improper regulation and have initiated a lawsuit to that effect. Therefore, although we are commenting on NUREG-1804, we are not endorsing its use in reviewing any license application by DOE for the Yucca Mountain site.

If you have any questions, please feel free to contact me at (775) 687-3744.

Sincerely,

for Robert R. Loux  
Executive Director

3/29/02  
67 FR 15257  
17

Template = ADM-013

E-RIDS = ADM-03  
Call = J. Ciocco (JAC3)  
# Beranek (AFB)

**cc: Governor Kenny Guinn  
Nevada Congressional Delegation  
Commissioners, Commission on Nuclear Projects  
Joe Egan, Egan & Associates PLLC  
Marta Adams, Nevada Attorney General's Office**

**STATE OF NEVADA  
COMMENTS ON NUREG-1804  
YUCCA MOUNTAIN REVIEW PLAN**

**GENERAL COMMENTS**

**THE YUCCA MOUNTAIN REVIEW PLAN'S GUIDANCE TO DOE FOR ITS LICENSE APPLICATION DOES NOT REQUIRE DOE TO COMPLY WITH THE NUCLEAR WASTE POLICY ACT AND ADOPTS AND PERPETUATES THE FRAILTIES OF NRC'S REGULATION 10 C.F.R. 63 AND DOE'S REGULATION 10 C.F.R. 963.**

We acknowledge that the Yucca Mountain Review Plan is only a guidance document and that DOE does not have to comply with this document. Nonetheless, any guidance given by NRC with respect to the component parts of an anticipated license application ought to be complete and comply with the law. We have initiated a lawsuit relating to the issues contained in the following comments but feel it is necessary to address these issues again here in our comments on the Yucca Mountain Review Plan.

The primary shortcomings of proposed NUREG 1804 mirror the frailties of NRC's Part 63 regulation, specifically:

1. They fail to require that DOE present a license application in which geologic isolation is the primary barrier against the release of radiological contamination to the accessible environment.
2. As written, the Yucca Mountain Review Plan fails to require the submission by DOE of an affirmative safety case for Yucca Mountain in its license application.
3. The proposed YMRP fails to require DOE to establish the absence of materially adverse or potentially disqualifying conditions at the proposed Yucca Mountain site.
4. Unless changed, NUREG 1804 does not require DOE to prove in its license application the satisfactory performance of the geologic setting of Yucca Mountain after repository closure, or to establish the safety of the repository after closure with "reasonable assurance."

Because the Nuclear Waste Policy Act of 1982 and the reasonable DOE and NRC regulations promulgated thereunder (10 C.F.R. 960 and 10 C.F.R. 60, respectively) required the foregoing components of a proposed high-level nuclear waste repository, each of those aspects should be a required element of DOE's license application, and the current draft NUREG 1804 should be revised prior to its final issuance to so reflect them.

## Background

The history of Congress' enactment of the Nuclear Waste Policy Act of 1982 (as well as the legislative history that preceded it and the regulations adopted by DOE and NRC succeeding it) establishes unequivocally that the foregoing principles are legally required prerequisites to the establishment of a federal nuclear waste repository at Yucca Mountain. The current contents of the YMRP (like that of 10 C.F.R. 63) are inadequate for the reason that they recognize only a fraction of NRC's responsibility to the citizens of the United States. NRC's new regulation (Part 63) and the latest version of its YMRP both focus solely on DOE's meeting an EPA dosage standard through the implementation of a Total System Performance Assessment methodology.

NRC's mandate from Congress is not so limited. It requires NRC to assure the health and safety of the American public with respect to the area of its responsibility (here, the licensing of the nation's first centralized high-level nuclear waste repository). While securing DOE's compliance with some other agency's dosage standard might be a worthwhile goal for NRC, its overriding statutory obligation is to provide reasonable assurance that licensed activities will not pose a threat to health, safety, property, security, and the environment.

## National Academy of Science

The principle that the primacy of geologic isolation is the hallmark of an appropriate nuclear waste repository is not a new idea. Rather, it was a concept that has endured nearly a half century until, a month before DOE recommended the Yucca Mountain site to the President, it was abandoned in December 2001. NRC inappropriately followed suit, adopting its new Part 63, which likewise abandoned the requirement for primary reliance upon the natural geologic medium. Prior to that, scientists around the world and in the United States had unanimously embraced the concept of deep geologic isolation, with its foundation a 1957 report by the National Academy of Sciences ("NAS"). *The Disposal of Radioactive Waste on Land*, Pub. 519, National Research Council, National Academy of Sciences (Sept. 1957).

## 1980 Environmental Impact Statement

President Carter, in 1980, ordered DOE to prepare an Environmental Impact Statement on the management of commercially generated radioactive waste. In order to recommend a long-term disposal solution, DOE considered every conceivable method of waste disposal, concluding with the recommendation for such disposal in mined repositories in geologic formations. DOE predicted that, in an appropriately selected location for geologic isolation, it was improbable that significant waste concentrations would ever reach the human environment.

DOE's 1980 EIS required that any repository site should have geologic and subsurface hydrologic and geochemical characteristics compatible with waste isolation and that the site should be located in a geologic setting that is known to have been stable, or free from major disturbances such as faulting, deformation, and volcanic activity for a long time. The bottom line of DOE's 1980 EIS was that the host rock and its properties would be the main element in containing the waste within the repository and in isolating the waste from the human environment for the long term.

### Nuclear Waste Policy Act

In adopting the Nuclear Waste Policy Act of 1982, Congress followed the principles previously articulated by NAS and DOE, requiring that detailed geologic considerations be **primary criteria** for the selection of a nuclear waste repository. The NWPA also required DOE to establish guidelines specifying geological, hydrological, geophysical, and seismic factors that would disqualify any site from development as a repository. The legislative history of the NWPA reflected Congress' adoption of the premise that the geologic media was to be the ultimate barrier that isolates the waste from the biosphere and that engineered barriers would only be intermediate and redundant forms of isolation.

### DOE Guidelines

Consistent with the mandate of the NWPA, DOE promulgated site suitability guidelines in 1984 (10 C.F.R. Part 960) specifying the geologic requirements and qualifying and disqualifying conditions as required by the NWPA. In its original site suitability guidelines, DOE provided that "Engineered barriers shall not be used to compensate for an inadequate site; mask the innate deficiencies of a site; disguise the strengths and weaknesses of a site and the overall system; and mask differences between sites when they are compared." 10 C.F.R. § 960.3-1-5 (1984). Also, in 1985, DOE promulgated its "Mission Plan" as required by the NWPA, stating that it intended to place primary importance on the capabilities of the natural system for waste isolation. DOE specified that any engineered barriers would not be relied on to compensate for deficiencies in the natural system.

### NRC Rule

NRC's original repository licensing rule (10 C.F.R. 60) remained true to the foregoing concepts, defining a candidate site as "a geologic and hydrologic system within which a repository will be located." 10 C.F.R. § 60.1. According to NRC documents published in connection with 10 C.F.R. 60, NRC agreed that the suitability of the geologic setting must be the ultimate indicator of repository safety since manmade contrivances, no matter how advanced, are always subject to some possibility of failure. The in-depth assessments of the natural media, and the enumeration of disqualifying criteria that were adopted by DOE in 10 C.F.R. 960, were mirrored by prerequisites in NRC's 10 C.F.R. 60.

### Abandonment of Geologic Focus by DOE

By the time DOE had accomplished some significant site characterization work in the mid-90s, it became obvious that Yucca Mountain would likely not meet the requirements of 10 C.F.R. 960. Estimates of water infiltration into Yucca Mountain were some 100 times higher than had been expected. In addition, there were unexpected fast pathways for the movement of radioactive material from the repository to the water table below. As a consequence, and instead of reporting to Congress the inadequacy of Yucca Mountain and seeking an alternative, DOE adopted a different tactic, that of abandoning the primary focus on the geologic criteria in favor of a “Total System Performance Assessment” under which any combination of natural and engineered features, looked at **cumulatively**, could be considered to justify the recommendation of a repository being constructed at Yucca Mountain. This formulation could and did permit DOE to premise a recommendation of a repository at Yucca Mountain almost entirely on a system of engineered barriers and in spite of the frailty of the natural barriers. DOE’s guidelines no longer require any determination that long-term waste isolation is primarily geologic, and no specification of physical qualifying or disqualifying conditions, indeed no real analysis whatsoever of **site** suitability or **site** safety.

### NRC Follows Suit

By its promulgation of 10 C.F.R. 63, NRC acquiesced in DOE’s abdication of the requisites set out in the NWPA. NRC’s Part 63 adopted the requirement for a Total System Performance Assessment (which by itself might not be detrimental), but also joined DOE in abandoning the subsystem performance requirements and qualifying and disqualifying criteria, which are required by the NWPA and which had been part and parcel of the NRC’s Part 60 for almost 20 years.

While NRC’s Part 63 would require DOE to “identify” or “describe” or “discuss” the capability of various barriers, including natural barriers, it does not require that any natural geologic barrier contribute any specific level of isolation capability to the repository.

### Review Plan

Predictably, the inappropriate and indeed unlawful redirection of the factors to be assessed to qualify and assure the safety of a proposed Yucca Mountain repository are carried forward and mimicked in NRC’s subject NUREG 1804 — its roadmap as to what it expects DOE to put forward in its license application. In short, NUREG 1804 embraces the Total System Performance Assessment methodology of 10 C.F.R. 63 and 10 C.F.R. 963 and departs entirely from the assessment of individual subsystems, the specific qualifying and disqualifying geologic criteria, and the primary reliance upon the natural media, which were the hallmarks of 10 C.F.R. 60, 10 C.F.R. 960, and before them, the

NAS report, DOE's 1980 EIS, and the Nuclear Waste Policy Act itself, as well as DOE's subsequent 1985 Mission Plan.

NUREG 1804 should be revised prior to its final promulgation to reflect the foregoing principles in order to require that the license application to be filed by DOE will embrace the criteria mandated by Congress in 1982.

## **SUBJECTIVE REVIEW**

A primary problem with the Yucca Mountain Review Plan is the subjective nature of the review of the license application by the NRC staff. This is a first-of-a-kind project (NRC's own words from page 1-3 of the Review Plan) that the NRC is attempting to license in a manner the same or even more lenient than nuclear reactors, where there is a 40-to 50-year history. Because of the "risk-informed" basis for the plan, the NRC is not only relying on DOE to determine the level of importance of almost all the aspects of the repository program, but also allowing its staff to determine how much effort they want to put into reviewing the license! Because there are no definitive criteria against which the license application will be measured, NRC's review of the license application will be almost totally subjective. (pg. 1-19; Section 1-4 - Components of Each Review Section) This is unacceptable.

## **COMPARISON OF JULY 2000 DRAFT WITH REVISION 2**

When comparing the July 2000 draft of this document with Revision 2 issued for comment, we find multiple instances where the acceptance criteria, already too lenient and subjective, were made even more so in Revision 2. For example, on page 2-5 in the July 2000 draft, the Review Plan requires an analysis that demonstrates repository performance does not depend unduly on any single barrier. This requirement has been deleted from Revision 2. One has to wonder why NRC has backed off on this requirement, given that it is widely known, and acknowledged by DOE, that the waste package provides the vast majority of the repository performance. Shouldn't the NRC want to be certain that the waste package will perform as intended for the time required before granting a license? Another example is on page 4.2-1 of the July 2000 draft that requires DOE to identify important barriers and, among other things, describe the reliance on each barrier in meeting the overall performance objective. This language also was removed from Revision 2. Yet another example is in Section 4.2.1.3, Model Abstraction where there was a requirement for the NRC staff to decide if the support bases for the safety case clearly show the degree of reliance on various parts of the system. This language was removed from Revision 2. There are too many other examples to list in these comments.

The NRC Advisory Committee on Nuclear Waste has made comments on the lack of objective criteria in the Review Plan against which the NRC staff will measure the DOE license application. If NUREG-1804 goes forward and is used to review a license application by DOE for Yucca Mountain, the NRC should, at a minimum, revisit the

language removed from the July 2000 draft in Revision 2 and reinsert it in the interest of ensuring a safe site.

## **VARIATIONS BETWEEN 10 C.F.R. PART 63 AND REVISION 2 OF THE YUCCA MOUNTAIN REVIEW PLAN**

There are variations from the language and format contained in 10 C.F.R. Part 63 in the Review Plan, specifically 63.21 Content of Application. All language and format contained in 10 C.F.R. Part 63 should be the same in the Review Plan, since it is NRC's regulation to which DOE must adhere. All definitions contained in Part 63 should be contained in the Review Plan. For example, there is no definition of the geologic repository operations area in the Glossary of the Review Plan.

## **A SAFE SITE VERSUS ONE THAT MEETS REGULATIONS**

The NRC should pay heed to the numerous comments from many outside entities such as the Nuclear Waste Technical Review Board and the IAEA Peer Review Panel on the Total System Performance Assessment by requiring DOE to demonstrate in its license application that it actually understands the site, its geology, and how it works to prevent the release of radionuclides, and does not just rely on Performance Assessment modeling to show that it can meet the EPA standards. DOE's TSPA is based on models, assumptions, and prayer that it all will work the way they envision. This does not mean that the site is safe. After all, the NRC's prime mission is to ensure the safety and health of the public and the environment. On page 1-4 of the YMRP, the NRC acknowledges that the "burden of proof is on the applicant or licensee to show that the proposed action is safe..." How will the NRC evaluate that DOE has shown the site is safe if all that the licensing review requires is that the application calculates the TSPA dose estimate?

## **TRANSPORTATION**

NUREG 1804 makes no provision for scrutinizing DOE's transportation plans for Yucca Mountain. NRC's public statements with respect to its responsibility in regard to the transportation of high-level waste to a proposed repository at Yucca Mountain are inconsistent and equivocal. On occasion, NRC insists that its only responsibility is to ensure that such waste is transported in casks that have been approved by NRC. Even if this is the limit of NRC's responsibility, NUREG 1804 nowhere requires such a commitment from DOE. Moreover, recent official pronouncements of NRC suggest a significantly greater role for the Commission with respect to the safety of nuclear waste transportation to the proposed repository.

In a May 10, 2002 letter to Senator Richard J. Durbin of Illinois, NRC Chairman Meserve stated, "NRC reviews and approves physical security plans for spent fuel shipments conducted by NRC licensees." Nowhere does NUREG 1804 require the delivery to NRC of DOE's physical security plans for spent fuel shipments to the proposed repository.

NRC provided comments to DOE's 2000 draft Environmental Impact Statement concerning DOE's treatment of the proposed **transportation modes and routes** to Yucca Mountain. Yet, on other occasions, NRC seems to disavow any responsibility in that respect and does not address it in NUREG 1804.

Chairman Meserve informed Senator Durbin in his May 10 correspondence that NRC has entered into a "Procedural Agreement with the U.S. Department of Energy on Spent Fuel and High-Level Waste Transportation Packaging." 48 Fed. Reg. 51875 (1983). Chairman Meserve stated that agreement established common planning assumptions and outlined **procedures** that NRC and **DOE will observe** in connection with the development of packaging to be used for transportation of spent fuel and high-level waste under the provisions of the NWP. Again, DOE's compliance with such procedures is not made a requisite part in NUREG 1804, which it ought to be before NRC — charged with the responsibility for the public health and safety of American citizens in the realm of the handling of nuclear waste — seriously considers granting a license to DOE.

Finally, Chairman Meserve specifically advised Senator Durbin, "We expect that DOE's commitment to define transportation modes and routes will allow for more precise estimates of impacts. . . . We expect that any such additional reviews will be completed **in support of a license application.**" NRC should translate that expectation into a requirement by ensuring its inclusion in a revised NUREG 1804. We attach Chairman Meserve's letter to Senator Durbin as part of our comments on the Review Plan.

## SPECIFIC COMMENTS

1. Executive Summary; page xvi

How can NRC evaluate the adequacy of the preclosure safety analysis regarding performance objectives to limit doses to workers and the public if the design of the repository contained in the license application is not final?

2. Section 1 Introduction; page 1-1,2

The NRC must modify the DOE EIS to incorporate, at least, the repository and surface facility designs as presented in the license application. The NRC must then, in its EIS, analyze the specific impacts of the facility designs as presented. The NRC must also reconcile the repository construction and operation schedules presented in the license application with those in the EIS, and those implicit in the impact analyses in the EIS. The revised EIS must be issued as a draft for public review and comment, as required by the National Environmental Policy Act.

Page 1-3; last sentence of Section 1

How can the NRC incorporate “performance history” in licensing decisions for the repository program when there has never been a repository licensed before? Also, how will the NRC enforce the concepts of “defense-in-depth” or “safety margins” when there are no objective criteria against which to judge DOE’s license application?

3. Section 1.1.1 Licensing Review Philosophy; page 1-4

The whole repository program is a “unique proposal,” so a standard licensing review is inadequate.

Given the first-of-a-kind nature of the repository program, scientific precision, especially for issues related to health and safety, should be required.

4. Section 1.1.2 Format and Content of Documents; page 1-6

What if one round of requests for additional information is insufficient? Given DOE’s track record on fulfilling agreements, what will be the procedure if one round is not sufficient?

Is there a limit to the amount of additional information requests that would result in the rejection of the LA? In other words, if more than a certain number of requests are necessary, would the LA be rejected, or are there a limitless number of requests that could be made and a draft SER still be issued and hearings begun? How lenient will NRC be in allowing DOE to submit an incomplete application and then telling DOE how to fix it?

At a minimum, DOE's responses to questions from the NRC staff should be published as a Supplemental Safety Analysis Report, and the NRC staff review of the responses should be published as a Supplemental Safety Evaluation Report. It would be preferable to have the draft SER lead to a revised DOE SAR, prior to the start of the license hearings, rather than follow the piecemeal process described in the Review Plan. The Review Plan should also acknowledge that the Nuclear Waste Policy Act does permit the review period to be extended to four years.

What is the recourse for the NRC if DOE does not agree to one or more of any limiting conditions placed on the license approval?

5. Section 1.2 General Review Procedure; page 1-7

All interactions between the NRC and DOE on additional information for the license application should be by public meeting, or, at a minimum, any conference call should include the public. If the public is not able to participate in a conference call, then the call should not go forward.

6. Section 1.2.1 Acceptance Review Objectives; page 1-8

Is there a difference between additional information requested during the Acceptance Review ("to make the application complete") and additional information requests mentioned in Section 1.2, General Review Procedure? If so, what is the difference?

7. Section 1.2.2 Detailed Review Objectives; page 1-8

"Based on the mandatory 3-year time frame..." Obviously, the NRC staff will begin its review after receipt of the application. Was the statement intended to stipulate some time after receipt of the application that the staff would conclude its review?

What is the difference between "open items" that are outstanding at the time of publication of the SER and "confirmatory items?" The paragraphs discussing these two items are confusing.

8. Section 1.3.1 Developing a Risk-Informed, Performance-Based Review Plan for General Information; page 1-12

Under the description of Section 3.3, "Physical Protection Plan," the Review Plan states that the "system must provide assurance that activities involving high-level radioactive waste do not constitute an unreasonable risk to the public health and safety." One, does this statement also include spent nuclear fuel? If not, why not? Two, doesn't this statement imply that transportation is included in this plan? Transportation is an activity that involves both high-level radioactive waste and spent nuclear fuel. Will the NRC evaluate DOE's transportation plans as part of the license application?

9. Section 1.4 Components of Each Review Section; pg. 1-19,20

If the NRC staff uses “the technical understanding and basis for issue resolution developed during prelicensing...,” it must make explicit and specific reference to the documentation supporting its decision to accept or adopt its previous review. As stated numerous times by NRC staff, prelicensing issue resolution is not intended to close any issue during the staff’s license application review and subsequent license application hearing.

Acceptance Criteria Subsection: What does consideration of “proposals for other solutions and approaches on a generic basis” mean? A definition of this statement and the methodology for such considerations need to be described.

Yucca Mountain Review Plan Updates: Just as with Revision 2 of the Review Plan, any modifications or updates should be issued for public review and comment. This section should contain a commitment to such a review process.

10. Section 2.1 Description and Purpose of Acceptance Review; pg.2-1

The sentence should read “The letter will contain a disclaimer stating that **requests** for additional information...”

11. Section 2.2 Acceptance Review Checklist; pg. 2-1

The language and format of the Review Plan for this checklist should be identical to the language and format of 10 C.F.R. 63.21 - Content of Application. There is no reason for the minor variations from the language and format of the Rule. The variations, rather than providing any clarification, raise the question as to why the checklist is not identical to the Rule.

Page 2-8: What other “plans to use the geologic repository operations area for purposes other than disposal of radioactive wastes?” If this is an attempt to allow DOE to build an MRS at Yucca Mountain, the NRC should remember that is specifically prohibited by law.

12. Section 3.1.2 Review Methods; pg. 3-2; bullet 6

“A general discussion of the plans to restrict access...” This should include a description of the status of activities to meet the requirements of 10 C.F.R. 63.121 (Requirements for ownership and control of interests in land), notwithstanding the Acceptance Criteria of Section 4.5.8.3 of this Review Plan.

13. Section 3.1.3 Acceptance Criteria; pg. 3-2

“Plans to restrict access...” This should include an estimated schedule for when all requirements of 10 C.F.R. 63.121 will be completed, including those beyond the direct purview of the Department of Energy.

14. Section 3.4.2 Review Method 1; page 3-23

Under what conditions would spent nuclear fuel or high-level waste be transferred out of the geologic repository operations area?

15. Section 3.4.2 Review Method 2; pg. 3-23

“Verify that procedures...” This should apply to any quantity of material that may be missing, not only to a “significant quantity.” This also applies to Acceptance Criteria 2, as well. (pg. 3-26)

16. Section 3.5.3 Acceptance Criterion 3; p. 3-34 - bullet 4

“Additional site characterization work...” Site characterization is to have been completed prior to submittal of a license application. If site characterization is not complete, the application should not be submitted, and, if it is submitted, it should be ordered to be withdrawn until such time as site characterization is complete. It is not acceptable to attempt to delegate incomplete site characterization work to the Performance Confirmation Program or the Research and Development Program that is intended to develop, on a specific schedule, information to “confirm the adequacy of design.”

17. Section 4.1.1 Preclosure Safety Analysis; page 4.1-1

As stated above, how can the NRC evaluate the adequacy of the PSA for compliance with performance objectives to limit doses to workers and the public if the design of the repository is not final at the time of submittal of the license application?

Page 4.1-2: The Review Plan states that NRC staff resources will focus their review proportionally on the inspection and review of high-risk significant structures, systems, and components important to safety. It is the NRC who is responsible for public health and safety and therefore cannot and should not defer to DOE’s judgement as to what components are most important to safety. The NRC should do a separate analysis of what, in their view, are high-risk significant structures, systems, and components important to safety.

18. Section 4.1.1.1 Site Description as it Pertains to Preclosure Safety Analysis; p. 4.1-2

This section should include among the areas of review a description of the previous use(s) of the land within the entire area of the land withdrawal for the Yucca Mountain repository. The Review Method for this area of review should include verification that structures and other man-made facilities are accurately located on a map and adequately described as to their past and current use(s).

The Acceptance Criteria should require that the license application contain the maps and descriptions noted above, and documentation certifying that there are no residual sources of radiation within the withdrawal area associated with the prior use of the land, such as radioactive waste storage or disposal facilities. The certification should be based on both a records search and a complete current instrument survey of the land area in order to accurately locate and facilitate removal of all known and previously unknown residual sources of radiation.

We raise this issue, in part, because of acknowledged, but currently unverified reports of used nuclear rocket fuel buried at an unknown location within Area 25 of the Nevada Test Site, and the proposed land withdrawal area's inclusion of a significant portion of Area 25.

If these requirements are not incorporated into the Site Description, they should be included in the section regarding 10 C.F.R. Part 20 ALARA requirements that extend to the entire withdrawal area of the Yucca Mountain site.

19. Section 4.1.1.4.4 Evaluation Findings; page 4.1-28

Please define a "reasonably comprehensive" identification and analysis of potential event sequences. This term is too vague to have any meaning.

20. Section 4.1.1.7.2.3 Geologic Repository Operations Area Design and Design Analyses - Part III - Review Method 1; page 4.1-71

The Review Plan states that the NRC staff should "Confirm that the license application documents significant discrepancies or uncertainties related to the corrosion and mechanical resistance of container materials and relevant engineered barrier system components, such as the drip shield." The implication from this statement is that if the license application simply documents this information, then that will be sufficient. Does the NRC not plan to evaluate the significance of this information and how it might affect repository performance? If this evaluation is to take place, what criteria will be used against which to measure this information?

21. Section 4.1.2 Plans for Retrieval and Alternate Storage of Radioactive Waste; p. 4.1-94

Waste retrieval plans should have a commitment to include a demonstration of the retrieval operations processes in the Performance Confirmation Program.

22. Section 4.2.1.1.3 Acceptance Criterion 3; page 4.2-5

This acceptance criterion is extremely vague and too discretionary for the reviewer. It allows a level of scrutiny of DOE's technical basis for performance of each barrier to be judged on its level of importance from DOE's perspective, not as an independent assessment by the NRC.

23. Section 4.2.1.3.9.1 Areas of Review - Acceptance Criterion 5; page 4.2-91

Please give an example of an "experimental system."

24. Section 4.3-1 Research and Development Program to Resolve Safety Questions - Areas of Review; p. 4.3-1

The Program, according to 10 C.F.R. 63.21(c)(16), is to "confirm the adequacy of design." It does not, and was not intended to, confirm the adequacy of site characterization or natural barriers, as stated here in the Review Plan. These two added areas of confirmation are not authorized by the Rule and should be deleted from this text. Adequacy of site characterization and natural barriers is reviewed elsewhere in the Review Plan and could be included in the Performance Confirmation Program, as deemed appropriate. The adequacy of information on these two topics should be demonstrated in the license application as submitted. It is not acceptable to use the Research and Development Program to complete work that should have been completed prior to the submittal of the license application.

25. Section 4.4 Performance Confirmation Program; p. 4.4-1

The Performance Confirmation Program should include a requirement for demonstration of the waste retrieval operations process.

26. Section 4.5.4 Expert Elicitation; page 4.5-65

DOE has had 20 years to obtain sufficient data to evaluate the suitability of the Yucca Mountain site. The NRC staff should be very judicious in allowing the use of expert elicitation by DOE as a substitute for information that they could have obtained during site characterization but chose not to. The phrase "data hard to obtain through normal means" should have a very strict definition. The NRC should not allow DOE to substitute expert opinion for data that they were afraid to collect for fear of what the results might be.

RESPONSES TO QUESTIONS FROM SENATOR DURBIN  
(Letter to the Chairman dated March 22, 2002)

- 1a. How was the Nuclear Regulatory Commission involved in analyzing the transportation impacts associated with a recommendation of Yucca Mountain as a national nuclear waste repository included in the FEIS?

The U.S. Nuclear Regulatory Commission's (NRC) role on the Yucca Mountain Environmental Impact Statement (EIS) was as a commenting agency, as required by the Nuclear Waste Policy Act of 1982, as amended (NWPA). NRC is not designated as a cooperating agency (i.e., an agency designated under Council on Environmental Quality regulations to provide substantial assistance to the lead agency) for U.S. Department of Energy's (DOE) EIS; therefore, we did not actively participate in the EIS development process. As a commenting agency, the NRC reviewed DOE's draft EIS, including those sections of the draft that considered transportation, and provided comments on the draft EIS in February 2000. We also provided comments on the DOE's final EIS in February 2002.

NRC's comments on the draft EIS (letter of February 2000, Comment 3) included a comment on DOE's treatment of the proposed transportation modes and routes. In its final EIS, DOE acknowledged that additional National Environmental Policy Act (NEPA) analyses may be needed for transportation. As stated in NRC's letter of February 8, 2002, we believe that the analyses provided in the EIS appear to bound appropriately the range of environmental impacts, however, we expect that DOE's commitment to define transportation modes and routes will allow for more precise estimates of impacts that could result in revisions to the NEPA analyses. We expect that any such additional reviews will be completed in support of a license application. If the President's recommendation becomes a final decision, NRC will, of course, continue interactions with DOE and other interested stakeholders, to resolve outstanding technical and environmental issues, as needed.

- 1b. If Yucca Mountain is approved, what further transportation plans and Environmental Impact Statements would need to be completed?

Section 114(f) of the NWPA requires NRC to adopt, to the extent practicable, DOE's EIS prepared in connection with DOE's proposal to construct the repository. The NRC's regulations provide that it will be practicable to adopt DOE's EIS unless: 1) the action proposed in the EIS differs from the action proposed in DOE's license application and the difference may significantly affect the quality of the human environment; or 2) significant and substantial new information or new considerations render the EIS inadequate. NRC's adoption of the EIS, in whole or in part, will satisfy the NRC's responsibilities under NEPA.

In its final EIS, DOE stated that additional NEPA analyses in the area of transportation may be necessary. We expect that any such additional analyses would better define DOE's preferred option for transportation

- 1c. What role would your Agency play regarding transportation of spent fuel if Congress approves Yucca Mountain?

If DOE takes custody of the spent fuel at the licensee's site, DOE regulations would control the actual spent fuel shipment. Under such circumstances, the NRC's primary role in transportation of spent fuel to a repository would be certification of the packages used for transport. Section 180 (a) of the NWSA prohibits the Secretary of Energy from transporting spent nuclear fuel or high-level waste to a repository or monitored retrievable storage facility except in packages certified for such purpose by the Commission. The NRC has reviewed and certified a number of package designs which could be used for transport of spent fuel to a repository, and has additional designs under review. Security requirements for these shipments would be addressed under DOE regulations.

However, if NRC licensees are responsible for shipping the spent fuel not only must the transport container be certified by the NRC, but also the shipment must comply with NRC regulations for the physical security of spent fuel in transit (10 CFR Part 73). NRC licensees are subject to inspection for compliance with the NRC's transportation safety and security regulations. The NRC also issues Quality Assurance (QA) program approvals for radioactive material packages that apply to the design, fabrication, use and maintenance of these packages. Activities conducted under an NRC QA program are also subject to NRC inspection.

- 1d. How would your agency be involved in selecting transportation modes and routes for the relocation of nuclear waste if Congress approves Yucca Mountain?

As stated previously, if DOE takes custody to the spent fuel at the reactor site, the only involvement NRC will have in the transport will be the certification of the transport cask. However, even if a NRC licensee is responsible for spent fuel shipments, NRC would not be directly involved in selecting transportation modes and routes for nuclear waste shipments to Yucca Mountain. NRC regulations provide our licensees with a general license to offer licensed material to modal carriers for transport, provided several requirements are met, including use of approved packaging for the mode to be used. The regulations do not specify which modes are to be used -- that selection is left to the licensee.

The U.S. Department of Transportation (DOT) regulates routing for all hazardous material transportation, including radioactive materials. NRC reviews and approves licensee plans for spent fuel shipments to confirm the planned physical protection measures are adequate, that coordination with local law enforcement authorities has been established, and that the licensee has complied with applicable DOT routing regulations.

2. In the FEIS, the DOE expresses a preference for a mostly rail scenario. How would you advise Nuclear Regulatory Commission (NRC) licensees, States, and others responsible for disposing spent nuclear fuel and high level radioactive waste to act, given the different transportation scenarios proposed in the FEIS, including the mostly rail scenario, the mostly truck scenario, and the possibility of building a rail corridor or making highway improvements to and around Yucca Mountain?

NRC would advise that decisions regarding shipment logistics be left to shippers and carriers, provided of course that each shipment is conducted in full compliance with all applicable Federal and State safety and security regulations. NRC believes that its transportation safety regulations would provide adequate protection of public health and safety for shipments of spent fuel to Yucca Mountain regardless of the type of transportation used to ship the spent fuel. As a practical matter, some reactor sites do not have rail access, making highway shipment to a nearby rail transfer station the primary option. For those sites that do have rail access, it appears that the larger capacity of rail packages could contribute to shipment efficiency.

3. What mechanisms are currently in place to coordinate with other agencies (federal, state, and local) with jurisdiction over the transportation of nuclear waste to Yucca Mountain, if it is approved as a national repository?

The DOT and NRC jointly regulate safety regarding the transportation of radioactive material at the Federal level. In this regard, the agencies have established a Memorandum of Understanding (published July 2, 1979) that delineates their respective responsibilities. 44 Fed. Reg. 38690 (1979). Basically, DOT regulates the conditions of radioactive material transport, including package and conveyance radiological controls, routing, hazard communication, and shipper and carrier training. NRC primarily regulates the approval of large-quantity and fissile material packaging designs.

NRC has also entered into a "Procedural Agreement with the U.S. Department of Energy on Spent Fuel and High-level Waste Transportation Packaging." 48 Fed. Reg. 51875 (1983). The Agreement established common planning assumptions and outlines procedures that NRC and DOE will observe in connection with the development of packaging to be used for transportation of spent fuel and high-level waste under the provisions of the NWPA.

On March 29, 1984, the NRC issued a General Statement of Policy on NRC Response to Accidents Occurring During the Transportation of Radioactive Material. 49 Fed. Reg. 12335 (1984). In this Statement, the NRC acknowledges that states have the primary responsibility for protecting the health and safety of the citizens from public hazards. The NRC provides advance notification of each shipment to Governors. In a radioactive materials transportation accident, the NRC would offer technical assistance to the states in the form of information, advice, evaluations, and information on packaging characteristics. In addition, the DOE maintains teams of technically trained nuclear and transportation specialists available to assist states, upon request. If NRC assistance is not requested, NRC activities will be primarily limited to information collection.

An additional, and less formal, mechanism of coordination that the NRC employs with broader audiences affected by spent fuel shipments is public outreach. Each year, the NRC participates in many conferences and meetings with Federal, state, local and tribal organizations in which spent fuel transportation issues are discussed. The NRC plans to continue these activities to enhance public understanding of, and confidence in, the safety basis for these shipments.

- 4a. Are federal, state and local officials adequately trained, prepared, and equipped with the necessary skills to execute a large-scale shipment plan to bring nuclear waste to Yucca Mountain, if it is approved as a national repository?

NRC licensees have safely completed more than 1300 spent fuel shipments over the past 20 years. That safety record is in part attributable to the training and preparedness of the Federal, state, local and tribal officials involved in overseeing, inspecting, or monitoring the shipments. Spent fuel continues to be transported presently, and NRC is confident that the current level of Federal, state, local and tribal training, preparedness and equipment can be expanded as necessary in the years leading up to a large-scale shipment campaign to maintain the spent fuel shipment safety record.

- 4b. What federal training, planning, and resources would be made available for federal, state, and local officials who would be involved in the transportation of nuclear waste, including first responders, if Congress approves the President's recommendation on Yucca Mountain?

Section 180 (c) of the Nuclear Waste Policy Act of 1982, as amended, requires DOE to provide technical assistance and funds to States for training for public safety officials of appropriate units of local governments and Indian tribes through whose jurisdiction spent nuclear fuel will be transported. In this connection, DOE assistance will likely supplement the Federal programs that are already in place to ensure first responders are adequately trained and equipped. For example, NRC works closely with the Federal Emergency Management Agency (FEMA) in radiation emergency preparedness in the vicinity of NRC licensed facilities. FEMA has programs specifically designed to equip and train first responders for a variety of hazards, including radiation hazards. In addition, the Department of Justice, Office of Justice Programs provides training and funding for equipment for first responders to respond to a variety of incidents, including radiological hazards. For Federal responders, NRC would rely on the full Federal response as described and agreed to in the Federal Radiological Emergency Response Plan, as published in the Federal Register as a Notice, May 8, 1996, Part III, pp. 20944 - 20970.

May 10, 2002

The Honorable Richard J. Durbin  
United States Senate  
Washington, D.C. 20510

Dear Senator Durbin:

I am responding on behalf of the U.S. Nuclear Regulatory Commission (NRC) to your letter of March 22, 2002. You requested information to help evaluate the safety of transporting nuclear waste through and from Illinois to the proposed repository at Yucca Mountain.

At the outset, I would note that federal regulation of spent fuel transportation safety is shared by the U.S. Department of Transportation (DOT) and the NRC. DOT regulates the transport of all hazardous materials, including spent fuel, and has established regulations for shippers and carriers regarding, among other things, radiological controls, hazard communication, and training. For its part, NRC establishes design standards for the casks used to transport licensed spent fuel, and reviews and certifies cask designs prior to their use. NRC also conducts inspections to ensure that spent fuel packages are designed, fabricated, used, and maintained and that shipments are made, in accordance with NRC and DOT transportation safety regulations. In addition, NRC reviews and approves physical security plans for spent fuel shipments conducted by NRC licensees.

The Department of Energy (DOE), unless otherwise required by legislation, has the authority to establish its own cask certification and security requirements for the transportation of spent fuel under its authority. DOE currently voluntarily chooses to use casks certified by NRC for all of its spent fuel shipments. However, the Nuclear Waste Policy Act of 1982 as amended, requires DOE to use casks certified by the NRC when it transports spent fuel to a national high-level waste repository or a national monitored retrieval storage facility. DOE has the authority to impose its own security requirements for these shipments.

The safety record associated with the current regulatory system for the transportation of spent fuel is exemplary – approximately 1,300 shipments of civilian fuel and 920,000 miles without an accidental radioactive release. Nonetheless, we continually examine the transportation safety program. Over two years ago, the NRC began the Package Performance Study to study cask performance under severe impact and fire accident conditions. The study plan calls for full-scale testing of a cask to confirm computer models of cask response to severe accident conditions. As a part of its evaluation, the NRC staff is analyzing appropriate national transportation accidents, such as the 2001 train accident in Baltimore to determine if our transportation requirements need to be modified. Finally, NRC is sponsoring a study to update its evaluation of cask response to acts of sabotage. We intend to utilize the results of these studies to determine whether security requirements need to be modified. These studies together with any resulting changes, if necessary, will provide further confidence that our national system for the transportation of spent fuel is safe.

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Additional information concerning your specific questions is enclosed. If you have questions, please contact me.

Sincerely,

*IRA*

Richard A. Meserve

Enclosure:  
Responses to Questions  
from Senator Durbin