OFFICE OF THE SECRETARY
CORRESPONDENCE CONTROL TICKET

Date Printed: Apr 21, 2005 14:41

PAPER NUMBER:	LTR-05-0219	**LOGGING DATE:**	04/20/2005
ACTION OFFICE:	EDO		

To: Strosnider, NMSS

AUTHOR:	Mr. Robert Loux
AFFILIATION:	NV
ADDRESSEE:	Mr. Steve Specker (EPRI)
SUBJECT:	Yucca Mountain Licensing

cys: EDO
DEDMRS
DEDH
DEDIA
AO
DEDR
RIV

ACTION:	Information
DISTRIBUTION:	RF
LETTER DATE:	04/14/2005
ACKNOWLEDGED	No
SPECIAL HANDLING:	Made publicly available in ADAMS via SECY/EDO/DPC
NOTES:	
FILE LOCATION:	SECY
DATE DUE:	**DATE SIGNED:**

KENNY C. GUINN
Governor

STATE OF NEVADA

ROBERT R. LOUX
Executive Director

OFFICE OF THE GOVERNOR
AGENCY FOR NUCLEAR PROJECTS
1761 E. College Parkway, Suite 118
Carson City, Nevada 89706
Telephone: (775) 687-3744 • Fax: (775) 687-5277
E-mail: nwpo@nuc.state.nv.us

April 14, 2005

Mr. Steve Specker, President
Electric Power Research Institute
3412 Hillview Avenue
Palo Alto CA 94304

Subject: *Yucca Mountain Licensing Options for Very Long Time Frames: Technical Bases for the Standard and Compliance Assessments*, EPRI, Palo Alto, 2005.

Dear Mr. Specker:

In your Report proposing a new Yucca Mountain safety standard to replace the Environmental Protection Agency's (EPA) standard struck down by the Court of Appeals last July, you ask for comments from interested parties. Nevada is certainly interested in your Report and its recommendation for a new EPA rule. We have submitted our own proposal to EPA, which I have attached.

At the outset, we note the apparent conflict of interest in having a group like Monitor Scientific, the principal author of the Electric Power Research Institute (EPRI) Report, working for both EPRI and the EPA at the same time on the development of the new radiation standard for Yucca Mountain. (See www.monitorsci.com). At a minimum, this creates the appearance that the EPRI Report is simply the industry's stalking horse for EPA's new rule. And with Monitor already in the EPA tent, there is little hope for Nevadans or any member of the public to expect an unbiased new rule. Monitor's web site also boasts of assisting EPA in development of the original EPA rule establishing a 15 millirem/yr standard for Yucca, a standard EPRI and Monitor now propose watering down substantially.

Aside from that compromising conflict, the fundamental problem with your Report is that there is a complete disconnect between the body of it and the recommended new EPA rule. The Report purports to present a standard that meets the Court of Appeals' July 2004 ruling, but actually does nothing of the sort. Your Report assumes that so long as the standard extends

beyond 10,000 years it will conform to the Court's requirements. That is a simplistic reading of the Court's opinion, one that smacks of engineers out of their depth on legal issues.

Having skipped over such obvious issues like why the 15 millirem standard cannot simply be extended out to the time of the peak dose expected from the repository, your technical authors engage in an elaborate discussion on how to treat future climates states, which seems to be what they really want to talk about. Without getting into the validity of the Report's technical conclusions on treatment of climate models, it is evident that they are irrelevant to the Report's conclusion, which simply urges adoption of a 100 millirem/yr standard after 10,000 years as the new rule. No amount of technical discussion can overcome this gap in reasoning.

The Court made clear, following the 1995 recommendations of the National Academy of Science, that the 10,000-year point had no significance in the establishment of a standard. The Court dealt specifically with the issue of terminating the standard at 10,000 years and rejected that arbitrary cutoff. But the same reasoning applies to using that date as a breakpoint for weakening the standard. When the Academy spoke of extending the standard to the time of peak dose it didn't mean extending some weaker standard to that time. It meant extending the standard to the peak. That is what Nevada has proposed to EPA. An attempt by EPA to adopt the sort of standard you recommend would not survive legal challenge.

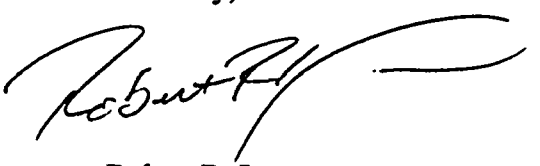
Moreover, the long time scales in your Report for when the peak dose occurs assume the most optimistic estimates for how long waste packages will last. With more realistic assumptions - here I refer you to the discussions of the Nuclear Waste Technical Review Board - the peak would come much earlier, possibly within thousands of years. The essential point in the Court's July 2004 ruling is that Yucca Mountain licensing must consider the situation after packages fail and therefore must consider the ability of the mountain to contain the waste in that event. That is what the Department of Energy (DOE) has been resisting all these years because the Department knows the site could then not qualify.

When we set aside the irrelevant technical discussion in your Report, it becomes clear how you selected a proposed long-term radiation dose standard. Your Figure 3-3 graphs average radiation doses at the measurement point in the environment. The curve that represents your estimate for the worst case - one in which the waste packages and drip shields both fail - shows a radiation dose peak in the distant future of about 100 millirems per year. Your Report then unabashedly recommends for a post-10,000-year dose standard precisely the figure that you believe is the worst case radiation dose produced by DOE's performance model. That says it all. The whole exercise is a transparent attempt to concoct a standard that you think DOE can meet.

There are dozens of other technical and legal objections we have with your Report, including its incorrect assumption that uncertainty increases over the long term after the packages fail (in DOE's models it decreases markedly); its acknowledged rejection of the basic intergenerational equity principles of the Joint Convention on the Safety of Spent Fuel and Radioactive Waste Management; its notion that present-day climate states can be assumed over

extremely long periods; its callous conclusion that citizens of Nevada may receive higher radiation doses than other members of the public because of some unspecified "benefits" they derive from the dump; its recommendation to ignore disruptive events such as earthquakes that might occur after 10,000 years; and its dubious thesis that "scientific confidence plays an important, but small, role in developing regulatory confidence" (p. 3-1). If EPA is unwise enough to adopt your recommendations, we will articulate all of our objections at that time.

Sincerely,



Robert R. Loux
Executive Director

RRL:njc

Enclosure

cc: Nevada Congressional Delegation
Environmental Protection Agency
NRC Advisory Committee on Nuclear Waste
U.S. Nuclear Waste Technical Review Board
National Academy of Science
Department of Energy

KENNY C. GUINN
Governor

STATE OF NEVADA

ROBERT R. LOUX
Executive Director

OFFICE OF THE GOVERNOR
AGENCY FOR NUCLEAR PROJECTS
1761 E. College Parkway, Suite 118
Carson City, Nevada 89706
Telephone: (775) 687-3744 • Fax: (775) 687-5277
E-mail: nwpo@nuc.state.nv.us

February 3, 2005

The Honorable Stephen L. Johnson
Acting Administrator
United States Environmental Protection Agency
Ariel Rios Building
1200 Pennsylvania Avenue, N.W.
Washington, D.C. 20460

Re: Public Health and Environmental Radiation Protection Standards for Yucca Mountain, Nevada (40 C.F.R. Part 197)

Dear Acting Administrator Johnson:

On January 14, 2005 I wrote to Administrator Leavitt asking him to initiate a public rulemaking process for developing the changes to the nuclear waste disposal standards in 40 C.F.R. Part 197 that are now mandated by the Energy Policy Act of 1992 and the Court's final judgment in *Nuclear Energy Institute v. EPA*, 373 F. 3d 1251 (D.C. Cir. 2004). I have not yet received a reply. However, in the interest of advancing a pubic discussion of the important issues that are involved in setting disposal standards for Yucca Mountain that are consistent with sound science and the law, I am enclosing Nevada's tentative views on what changes to 40 C.F.R. Part 197 are now required, along with an explanation of those changes. Nevada would be pleased to have its views included in the public rulemaking docket on this matter. Of course, Nevada reserves the right to supplement or modify its views as the required EPA public rulemaking progresses.

Nevada requests an opportunity to meet with you (or your designees) on this important matter in the near future. In keeping with the spirit of openness that Nevada believes should apply to this rulemaking, Nevada would prefer this meeting to be a public one. Nevada is of course aware that other Federal agencies such as the Department of Energy ("DOE") and the Nuclear Regulatory Commission ("NRC") have an interest in this matter, and would not object to their

participation in the meeting. Given the importance of the subject matter, Nevada would be surprised if your agency has not already engaged in substantial discussions with DOE and NRC on this rulemaking. Basic concepts of Federalism and fair play require that Nevada be accorded an equal right to participation in your agency's deliberations.

Sincerely,

Robert R. Loux
Executive Director

Enclosures as noted
cc:

Governor Kenny Guinn
Attorney General Brian Sandoval
Nevada Congressional Delegation
Secretary of Energy
Chairman, Nuclear Regulatory Commission
Chairman, NWTRB
Chairman, NRC ACNW
Chairman, NAS Board on Radioactive Waste Management

1. § 197.12 What definitions apply to Subpart B?

***

Compliance period means the period following disposal up to and including the time when the greatest risk (measured by the peak dose) occurs.

***

Performance assessment means an analysis that:

(1) Identifies ...and their probabilities of occurring during [10,000 years after disposal] the compliance period....

***

2. § 197.13 How id Subpart B implemented?

***

The NRC implements...project the performance of the Yucca Mountain disposal system [for 10,000 years after disposal] during the compliance period.

3. § 197.15 How must DOE take into account the changes that will occur during the [next 10,000 years after disposal] compliance period?

The DOE...that could affect the Yucca Mountain disposal system [over the next 10,000 years] during the compliance period.

2. § 197.20 What standard must DOE meet?

The DOE must demonstrate, using performance assessment, that there is a reasonable expectation that, [for 10,000 years following disposal] during the compliance period, the ...exposure....

3. § 197.25 What standard must DOE meet?

The DOE must [determine the earliest time...at or before 10,000 years after disposal: (1) D] demonstrate that there is a reasonable expectation that ...as a

result of human intrusion [,at or before 10,000 years after disposal] during the compliance period. The analysis must include all potential environmental pathways of radionuclide transport and exposure. [; and (2) If exposures...as an indicator of long-term disposal system performance; and (b) Include...if the intrusion is not projected to occur before 10,000 years after disposal.]

4. § 197.30 What standards must DOE meet?

The DOE must demonstrate that there is a reasonable expectation that, during the compliance period and assuming [for 10,000 years of] undisturbed performance after disposal, releases...to exceed....

5. § 197.35. What other projections must DOE make?

[To complement...No regulatory standard applies to the results of this analysis; however,] DOE must include the results of analyses required by §§ 197.20 and 197.25 and their bases in the environmental impact statement...."

6. § 197.36 Are there limits on what DOE must consider in the performance assessment?

Yes.
(a) The DOE's performance assessment shall not include consideration of very unlikely features, events, or processes, i.e., those that are estimated to have less than one chance in [10,000 of occurring within 10,000 years of disposal] 100,000,000 of occurring in any one year of the compliance period (10-8/yr). The NRC shall ...would not be changed significantly."
(b) The DOE's performance assessment need not include features, events and processes that can occur only after the period of geologic stability.

Explanation of Suggested Amendments

1. The new definition of "compliance period' is key to conforming the EPA regulation to *NEI v. EPA*, 373 F.3d 1251(D.C. Cir 2004) and the National Academy of Sciences' findings and recommendations in its 1995 report "Technical Bases for Yucca Mountain Standards" ["TBYMS"]. As the Court of Appeals recognized, the National Academy of Sciences expressly rejected a 10,000-year compliance period, and recommended that EPA's compliance assessment "be conducted for the time when the greatest risk occurs, within the limits imposed by long-term stability of the geologic environment." *NEI v. EPA*, 373 F.3d at 1270-71; TBYMS at 6-7.This definition and conforming changes to replace "10,000 years" with "compliance period" in §§ 197.12, 197.13, 197.15, 197.20, 197.25, 197.30, and 197.36 have the effect of requiring that compliance with the individual protection, human intrusion, and groundwater dose standards be demonstrated for periods that include the time of greatest risk, as measured by the peak dose.

   While the time of greatest risk could occur in a relatively short period (less than 10,000 years), if the waste packages were to fail relatively early, it could also occur much later, on the order of "tens to hundreds of thousands" of years or more. TBYMS at 2. In this regard, TBYMS helpfully explains (on page 71) that earth scientists "are accustomed to dealing with physical phenomena over long time scales" and that "in this perspective even the longest times [about 1,000,000 years] considered for repository performance models are not excessive." Moreover, TBYMS also points out (on page 72) that, because of difficulties in analyzing the thermal, biological, chemical, and hydro-geological processes affecting the integrity of the waste container, a long compliance period may reduce rather than add uncertainty in the performance assessment. This is because the longer-term assessment will take account of releases from the container failures that will inevitably occur during the longer compliance period, effectively mooting scientific uncertainties about waste container integrity.

   This new compliance period is absolutely required by TBYMS, which rejects any 10,000-year limitation on the compliance period and recommends instead (on page 2) that "compliance with the standard be measured at the time of peak dose, whenever it occurs." TYBMS qualified this recommendation by noting that the compliance period should be "within the limits imposed by the long term stability of the long-term stability of the geologic environment, which is on the order of one million years." *Id.* at 67. This qualification is addressed in proposed changes to § 197.36, discussed below.

   The definition of "period of geologic stability" is unchanged because it is already in accord with the recommendation in TBYMS.

2. The changes to §§ 197.13, 197.15, 197.20, 197.25, and 197.30 are made to conform to the new compliance period. The deletion of the requirement in § 197.25 for a determination when the waste package would degrade sufficiently that a human intrusion would occur without recognition is based on the reasonable proposition some or (most likely) all waste packages will have failed within the compliance period and so the determination will be unnecessary.

3. The deletions of §§ 197.25 (a)(2) and 197.25 (b) are made also for simplification and to conform to the amended § 197.25. Since there is no longer an arbitrary distinction between the time periods for the safety assessment and the NEPA evaluation, requires simply that the safety analyses and bases to be included in the license application and NRC safety reviews be included in the NEPA environmental impact statement as well.

4. The change to § 197.36 is also to conform to the new compliance period. The current language excludes from compliance assessment features, events, and processes that have less that one chance in 10,000 of occurring within 10,000 years after disposal. This may be seen as consistent with the TBYMS recommendation (on page 93) that a probability of one in one hundred million per year (10-8/yr) is sufficiently small that any resulting risk may be considered negligible. Replacing the current language with 10-8/yr is in accord with both the compliance period recommended by TBYMS and the probability level recommended by TYBMS as representing a negligible risk.

   As noted above, TYBMS (on page 67) qualified its recommendation that compliance be based on peak dose (time of greatest risk) by noting that the compliance period should also be "within the limits imposed by the long term stability of the geologic environment, which is on the order of [one million] years." This qualification applies more directly to scientific limitations on conduct of the performance assessment than to the choice of the compliance period as such, and so the NAS qualification is included as a new paragraph (b) in § 197.36, which is the regulation that addresses the limitations in the performance assessment. The existing provision excluding very unlikely features, events and processes, as modified, is now included in § 197.36 as paragraph (a). In accord with the NAS recommendation, new paragraph (b) of § 197.36 provides that the performance assessment need not include features, events and processes than can occur only after the period of geologic stability.