

Minnesota Governor's Nuclear Waste Council

DOCKET NUMBER
PROPOSED RULE

PR-62

(51 FR 22288)

15



DOCKETED

'86 SEP -8 P1:34

OFFICE OF SECRETARY
DOCKETING & SERVICE
BRANCH

August 29, 1986

Samuel Chilk
Secretary of the Commission
U.S. Nuclear Regulatory Commission
Washington, DC 20555

Dear Mr. Chilk:

Thank you for the opportunity to review the Nuclear Regulatory Commission's Proposed Conforming Amendments to 10 C.F.R. Part 60, Disposal of High-Level Radioactive Waste in Geologic Repositories, (51 Fed. Reg. 22288 - 22300 June 19, 1986).

We were particularly interested in reviewing the proposed changes in the rule in light of the petition for rulemaking filed jointly by the States of Nevada and Minnesota, as well as Minnesota's concerns over the adequacy of the Environmental Protection Agency's (EPA) Radiation Release Standards. Indeed, many of our comments here concern issues we have raised in the past and the way these issues have been addressed in the proposed amendments. In addition, we have some concerns about the changing position of the NRC on the definition of the disturbed zone as discussed in the proposed rules and the potential uses of a qualitative test of "reasonable assurance" that a proposed repository will not exceed radiation release standards.

Please contact us if we can be of further assistance.

Sincerely,

Tom Kalitowski, Chair

cc: Congressional Delegation
First and Second Repository States
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STATE OF MINNESOTA

COMMENTS ON THE PROPOSED CONFORMING AMENDMENTS TO 10 C.F.R. PART 60,
DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTE IN GEOLOGIC REPOSITORY

The State of Minnesota has reviewed the proposed revisions to 10 CFR Part 60 (51 Fed. Reg. 22288 - 22300 June 19, 1986), conforming the licensing rules of the U.S. Nuclear Regulatory Commission (Commission) with the Environmental Protection Agency's Radiation Release Standards (40 C.F.R. Part 191).

1. We support the Commission's decision to incorporate language defining active and passive institutional control (60.2). We also support the changes which incorporate post-permanent closure monitoring requirements into the license application and into license amendment for permanent closure (60.144, 60.52(c), 60.21(c), and 60.51(a)), as long as monitoring can be conducted without compromising repository performance.

2. Minnesota believes that 10 C.F.R. Part 60 should require the Commission to evaluate the Environmental Impact Statement the Department of Energy (DOE) is required to complete under 42 USC 10134(f) and 10 C.F.R. 60.21(a) to determine whether its adoption by the Commission would compromise the independent responsibilities of the Commission to protect the public health and safety under the Atomic Energy Act of 1954 (42 U.S.C. 2011, et seq.). Minnesota's position on this issue has previously been brought before the Commission in the amended petition for rulemaking filed jointly by the States of Nevada and Minnesota on September 30, 1985 (PRM 60-2).

Minnesota and Nevada, in their amended petition for rulemaking, sought the incorporation of a series of tests by which the Commission could determine whether it could adopt the DOE's EIS in 60.24(c) and (d). In making the determination, the Commission should consider:

"(1) whether the Department of Energy has complied with the procedures and requirements of the Nuclear Waste Policy Act (42 U.S.C. 10101 et seq.).

(2) whether the alternative sites proposed in the environmental impact statement are bona fide alternative sites; that site characterization under 42 U.S.C. 10133 has been completed at such sites; and that the Secretary of Energy, after site characterization is complete, or substantially complete, at such sites, has made a preliminary determination that such sites are suitable for development as repositories consistent with the guidelines promulgated pursuant to 42 U.S.C. 10132.

(3) whether the consideration of the alternative sites considered in the environmental impact statement included consideration of the natural properties that are expected to provide better isolation of the wastes from the accessible environment for 10,000 years after disposal; and whether the analyses used by the Department of Energy to compare the capabilities of different sites to isolate wastes were based upon the following:

(i) only the undisturbed performance of the disposal system has been considered;

(ii) the performance of the waste packages and waste forms planned for the disposal system was assumed to be the same from site to site and assumed to be at least an order of magnitude less effective than the performance required by 10 C.F.R. 60.113; and

(iii) no credit was taken for other engineering controls intended to correct preexisting natural flaws in the geologic media (e.g., grouting of fissures shall not be assumed, but effective sealing of the shafts needed to construct the repository shall be assumed).

(4) whether the disposal systems considered, selected or designed will keep releases to the accessible environment as low as reasonably achievable, taking into account technical, social and economic considerations.

(d) If the Commission determines that adoption of the environmental impact statement would compromise the independent responsibilities of the Commission, then the Commission shall consider fully the environmental impact of the selection of the proposed site as required by 42 U.S.C. 4321, et. seq."

Although these issues were raised by Minnesota and Nevada in their petition for rulemaking, they were not addressed by the Commission in the proposed amendments to Part 60 and no reason was provided for their exclusion from the proposed rules.

If the EIS process and the assurance requirements are to be effective, the Commission must insist that bona fide alternative sites have been identified and characterized; that preliminary determination of site suitability has been made after the DOE has characterized the sites, thereby gaining sufficient information to make the determination; and that no corners have been cut through reliance on engineered barriers to overcome the deficiencies of the natural properties of a flawed site.

These assurances are essential to building confidence in the repository program.

3. In 60.51(a)(1)(c), language requiring the description of monitoring devices which will indicate the likelihood that standards limiting releases of radioactivity to the accessible environment may not be met should be included to give the Commission a realistic basis for judging the effectiveness of monitoring.

4. In 60.51(a)(1)(E), the rule should require the applicant to indicate how the results of post-permanent closure monitoring will be shared with affected State, Indian tribal and local governments. Minnesota, in its August 1, 1984 response to proposed amendments to 10 C.F.R. Part 60, commented that states and tribes must not be relegated to the status of observers. In this case, states as

stewards of public health and safety, must have information on the results of monitoring, much the same as they must have access to raw and interpretive data during the site characterization process. Incorporating independent state and tribal access to monitoring data is a way of adding assurance that the containment requirements will be met. Guarantees of state and tribal oversight, which can serve as a check on long term monitoring, should be included in Part 60.

5. In the Commission's discussion of amendments to the definitions contained in 60.2, a change in direction is indicated with respect to the "disturbed zone." In 48 Fed. Reg. 28218 June 21, 1983, the Commission defines the disturbed zone as "that portion of the controlled area the physical or chemical properties of which have changed as a result of underground facility construction or as a result of heat generated by the emplaced radioactive wastes such that the resultant change of properties may have a significant effect on the performance of the geologic repository."

The definition says nothing about the ease or difficulty of understanding or modeling the results of underground facility construction or heat generated by the emplaced waste. It does not state that the disturbed zone is in any way dependent on the extent of the controlled area, except that the disturbed zone lies within part or all of the controlled area. The definition clearly encompasses the effects of thermal buoyancy of groundwater which results from underground facility construction or heat generated by the emplaced waste.

In the preamble to the proposed rules, however, the Commission contends that it did not intend to include the effects of thermal buoyancy among those effects attributed to a "disturbed zone". The new definition of the controlled area (narrowed to 5 kilometers maximum distance from the outer boundary of the underground facility) apparently gives rise to concern that the Commission may not be able to issue a license at a site at which groundwater travel time must be measured over a distance substantially less than 5 kilometers because the effects of thermal buoyancy have expanded the disturbed zone.

The decision to exclude thermal buoyancy from the definition of the disturbed zone seems to indicate that the Commission is changing its intent with respect to the disturbed zone. If this is the case, the Commission should amend the definition of the disturbed zone accordingly and further indicate what other processes may be excluded from the definition of the disturbed zone and why.

6. In the amended rules, the Commission proposes a scheme whereby two elements underly a finding that a proposed repository satisfies the desired performance objective for long term isolation of radioactive waste. The first is a quantifiable performance standard. The second is a qualitative determination that takes into account "substantial uncertainties" which "can be accommodated within the licensing process only if a qualitative test is applied for the level of confidence that the numerical performance objective will be achieved."

Such a qualitative test can serve as an important check on the quantitative results of an analysis of potential releases. However, it is Minnesota's belief that the provision of a qualitative supplement to quantified repository performance information can work in the opposite direction. A future Commission may be permitted, under 60.101(a)(2) of the proposed rules, to use a qualitative judgment about the role of uncertainty in performance assessment to override quantified data which may raise serious doubt about the ability of a proposed repository to meet the EPA release standards. This is particularly troublesome near the end of 60.101(a)(2) where the proposed rules explicitly discuss the possibility that the Commission may rely on "the degree of diversity or redundancy among the multiple barriers of a specific repository", presumably to overcome concerns raised by numerical predictions that EPA release standards have more than a "low" likelihood of being exceeded.

It is important for the Commission to clearly indicate in 60.101(a)(2) that the supplemental use of qualitative judgment in reaching a determination of reasonable assurance must work as a conservative check on overly optimistic quantitative predictions and not as an open door to a repository license for an unsuitable site.