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Docket Room M-1500
Mail Code 6102
U.S. Environmental Protection Agency
401 M Street SW
Washington, DC 20460

The attached supplementary comments are submitted on behalf of the New Mexico Environmental Evaluation Group in response to the Agency's invitation to provide additional comments on the Proposed Rule concerning "Criteria for the Certification and Determination of the Waste Isolation Pilot Plant's Compliance with Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Radioactive Wastes", 40 CFR Part 194, published at Federal Register vol. 60, no. 147, p. 39131 (August 1, 1995).

Sincerely,

for Robert H. Neill
Director

RHN:MKS:js
Enclosure



Supplementary Comments by the Environmental Evaluation Group (EEG) on the Proposed 40 CFR 194

September 14, 1995

On April 28, 1995, the Environmental Evaluation Group (EEG) submitted comments on the EPA's proposed rule for 40 CFR 194. These supplemental comments reflect an evaluation of the comments on the draft rule submitted by the Department of Energy (DOE) on April 20, 1995, as well as the DOE's Draft Compliance Certification Application (DCCA), and address only two issues, the projected drilling rate and the engineered barriers.

Drilling for natural resources must be considered in safety assessments for the WIPP repository. The drilling rate to be assumed for the performance assessment (PA) calculations is still being debated. The EPA has proposed a range of drilling rates consistent with the experience in mineral rich areas and specifically in the Delaware Basin. The DOE has advanced arguments to substantially reduce the rate recommended by the EPA. With respect to the drilling rate, the DOE comments suggest that the EPA criteria include "technically infeasible definitions", "propose incorrectly counting non-exploratory holes", and suggest "confusing language concerning the minimum rate of drilling". With respect to engineered barriers, the DOE suggests that the proposed rule provides no meaningful criteria or basis for the selection of engineered barriers. However, the language suggested by the DOE conflicts with the purpose and the intent of the Assurance Requirements of 40 CFR 191.

Summary of the EEG Supplemental Recommendations

§194.02 Definitions

- 1) For human activity and human intrusion, use the definitions recommended by the EEG comments of April 28, 1995.
- 2) There is no need for definitions categorizing well types, i.e. exploratory, developmental, etc.

§194.33 Consideration of human-initiated processes and events.

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| 194.33(b)(4)(i) | Retain the language proposed by the EPA |
| 194.33(b)(4)(ii) | Retain the language proposed by the EPA. |
| 194.33(b)(4)(iii) | Retain the language proposed by the EPA. |
| 194.33(b)(4)(iv) | Delete this section for the reasons stated in the EEG's comments of April 28, 1995 and in response to the DOE's concern about confusing language. |

§194.44 Engineered barriers.

Reject the notion of using engineered barriers as a component of the Containment Requirement of 40 CFR 191. To be consistent, maintain engineered barriers as an Assurance Requirement (see EEG's comments of April 28, 1995).

Drilling Rates in Performance Assessment

§194.02 Definitions

Concern: Technically Infeasible Definitions.

The DOE comments propose definitions for four terms related to drilling rate, including redefining two terms, *human activity* and *human intrusion*, and introducing two new definitions, *exploratory wells* and *development wells*, a distinction not found elsewhere in the EPA rules.

EEG's recommendation for defining the terms *human activity* and *human intrusion* are given in the EEG comments of April 28, 1995, and are repeated below:

Human activity means those human activities that may affect the disposal system, but do not necessarily intercept the repository. This includes drilling, mining, water injection wells, brine disposal wells, oil and gas production, secondary recovery through water and/or gas flooding.

Human intrusion means those human activities that intercept the repository, except intentional drilling or mining with the knowledge of the repository.

For the term *exploratory well* the DOE has recommended the inclusion of test wells, wildcat wells, and outpost wells. Yet no definitions are offered for these wells. More importantly, the DOE offers no sound explanation as to why drilling these types of wells would be inadvertently intrusive and drilling other wells into or through the repository would not be so.

The DOE's term *development (extraction) well* does not appear in either the EPA Standard or the EPA proposed Criteria. Why does the DOE recommend defining a term that is not used? The DOE recommends defining exploratory wells and development wells as a means of distinguishing between intentional and inadvertent intrusion. However, this recommendation has fundamental problems. The DOE argues that the drilling of exploratory wells is inadvertent (p. I-15, DOE comments on the Criteria). Actually, all drilling is inadvertent as long as the drillers are unaware of the existence of the repository and drill into the repository or through it.

§194.33 Consideration of human initiated processes and events.

Concern: Use of non-exploratory holes to project future drilling rates.

The DOE has recommended that 1) the past drilling rate calculation be restricted to exploratory wells, 2) the development wells be excluded, 3) the Delaware Basin is exclusive of the Capitan Reef, and 4) the period for drilling to estimate the drilling rate be extended to 75 years based on the availability of archival records for New Mexico.

There are several problems with the DOE proposal to limit the calculations to the exploratory wells, with the suggestion that developmental wells are not exploratory, and with the argument that developmental wells will not be intrusive. First, there is no reason to believe that any type of well would be less intrusive than any other type of well drilled through the repository. Once future wells establish the existence of reserves, additional wells will be drilled on an economically optimal pattern to also extract the resource.

Second, the opinion that developmental wells are not exploratory does not necessarily reflect regulatory definitions or legal experience. On Applications for Permit to Drill (APD), the Bureau of Land Management and the New Mexico Oil Conservation Division do not use the term "exploratory." Oil and gas wells are classified as either "field and pool" or "wildcat." The Rules and Regulations of the New Mexico Oil Conservation Division (1993, Rule 104) define "wildcat" wells and "development" wells as distinct and different. But the New Mexico regulations do not contradict the notion that either can be exploratory. In the case of Sun Exploration & Production Co. v. Jackson, an *exploratory development well* was described as one drilled to test potentially producing formations based on data obtained during earlier drilling and seismic operations. An *exploratory wildcat well* was described as a speculative well that did not offer a reasonable expectation of profit to a reasonably prudent operator under the same or similar facts and circumstances" (715 S.W.2D 199, 1986). Further, the terms "explore" and "develop" were used interchangeably (783 S.W.2d 202, 1989). In addition, the New Mexico regulations appear to be consistent with the legal opinion that the word 'develop' fully contemplates and includes exploration, a concept successfully advanced in the case of Gorenflo v. Texaco (566 F. Supp. 722, 1983).

Finally, for the purpose of assessing compliance with the EPA Standards, there is no reason to believe that the EPA Standards intended the drilling rate to be limited to a narrowly defined well category. All drilling activity should be considered "inadvertent intrusion" as long as the drillers are unaware of the existence of the repository and if the well is drilled into the repository or through it.

The DOE comments recommend using a 75 year period for human initiated events citing the extent of archival data maintained by the State of New Mexico. Of course, the State of New Mexico contains only the Northern Delaware Basin. Most of the Delaware Basin extends into the State of Texas. As noted by Keeseey:

Extensive deep drilling has not been undertaken in the New Mexico portion of the Delaware Basin, and only 10 to 15 percent of the available

acreage has been tested. This low development percentage does not mean that the Delaware Basin has no potential. On the contrary, the Delaware Basin has been, and still is, an area that is considered to have major oil and gas potential, particularly in the Delaware and Pennsylvanian series. The lack of extensive drilling in the northern portion of the Delaware Basin is believed to be related to: (1) a historically low controlled price for gas, (2) a somewhat higher risk of finding sufficient quantities of reserves as a result of the varying depositional environment, and (3) lack of readily available pipelines for the transportation of reserves to market during earlier periods. In the immediate vicinity of the "site area", the existence of potash mines has also deterred or prevented drilling for hydrocarbon reserves (Keeseey, 1976, p. 4).

The presence of potash continues to delay the drilling for oil and gas in the New Mexico portion of the Delaware Basin (Olsen, 1993).

If the time period is extended to 75 years, the drilling record should include the extensive drilling in the 1920's, 1930's and 1940's in the Texas portion of the Delaware Basin.

Concern: Minimum Rate of Drilling.

The DOE maintains that the language in §194.33(b)(4)(ii) and §194.33(b)(4)(iv) is confusing when attempting a reduction in the drilling rate under §194.43(c). However, the language proposed by the EPA is perfectly clear. Further, EPA's language is consistent with long recommended values for minimum drilling rate. The EPA proposes:

(ii) The total rate of human intrusion shall be the sum of the rates of each type of human intrusion. However, in no event shall the total rate of human intrusion be less than 25/km²/10,000 yrs or more than 62.5/km²/10,000 yrs.

(iii) In lieu of conducting the analysis in paragraphs (b)(4)(i) and (b)(4)(ii) of historical rates, a rate of 62.5 may be assumed.

(iv) The rate may then be reduced in accordance with §194.41 and §194.43(c).

There is no confusion. Based on its own technical analysis, the EPA is providing clear guidance stating that, for the WIPP area, the total rate of human intrusion can not be less than 25 boreholes/km²/10,000 yrs. However, the DOE maintains that "one interpretation of the language is the rate can never be less than the minimum, regardless of the credit proposed for markers." Actually, it is the correct and only interpretation. For this resource rich area, the EPA is proposing language that would allow the DOE to justify reducing the rate downward from 62.5 boreholes/km²/10,000 years but maintaining a minimum rate of no less than 25 boreholes/km²/10,000 years. Through its comments, the DOE indicates a desire to reduce the rate below 25 boreholes/km²/10,000 years with no minimum drilling rate.

As to §194.33(b)(4)(iv) and §194.43(c), the DOE is concerned about confusing language. The EEG comments of April 28, 1995 were concerned allowing credit for an assurance requirement (passive institutional control) to help demonstrate compliance with the containment requirement. Such an allowance would be inconsistent with the purpose of the assurance requirements. To address the DOE's concern about confusing language and the EEG's concern about inconsistency with the stated intent of the EPA Standards, §194.33(b)(4)(iv) and §194.43(c) should be deleted from the proposed criteria.

Engineered Barriers

§194.44 Engineered barriers.

Concern: Number of barriers required for compliance.

The DOE recommendation suggests that engineered barriers be required to meet the Containment Requirement and that only one engineered barrier may satisfy this requirement. The EEG position is that a combination of engineered barriers such as a modified waste form, robust container, and engineered backfill be required to provide additional assurance for the integrity of the repository in view of the inherent uncertainties in projecting the long-term performance of the repository.

References

- Keesey, J. J., 1976. Hydrocarbon Evaluation Proposed Southeastern New Mexico Radioactive Material Storage Site, Eddy County, New Mexico. SAND77-7033, Volume I, Sandia National Laboratories.
- Olsen, J.A., 1993. Federal Management of the Potash Area in Southeastern New Mexico. New Mexico Geological Society. *Proceedings*, Forty-fourth Annual Field Conference, October 6-9.