Westinghouse Electric Corporation Power Systems Company



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July 20, 1983

Mr. J. M. McGough, Project Manager WIPP Project Office U. S. Department of Emergy P. C. Box 5400 Albuquerque, NM 87115

Subject: Testimony on 40 CFR 191

Dear Mr. McGough:

Attached for your information please find a copy of the testimony which was presented to EPA's Science Advisory Board on July 13 in Washington, D.C. It is suggested that a copy of the testimony be transmitted to the Environmental Evaluation Group for their information.

Sincerely,

W. Bar

W. Baer, Manager Safety Assessment

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Attachment DA:83:0334

cc w/attachment: R. K. Brown G. L. Hohmann V. F. Likar C. C. Little



TESTIMONY ON PROPOSED 40 CFR 191 EPA Science Advisory Board July 1983

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WIPP Project P. O. Box 40039 Albuquerque, New Mexico 87195-0039

I appreciate the opportunity to appear before the Board to present the results of the WIPP Project's review of the proposed rule 40 CFR 191, "Environmental Standards for the Management and Disposal of Spent Nuclear Fuel, High Level and Transuranic Radioactive Wastes," published in the Federal Register on December 20, 1982. Although the Project's comments have been included in those submitted by the Department of Energy to the EPA on May 2, 1983, it is extremely important for you to consider three significant areas of concern of the WIPP Project. The areas of concern are 1) the requirement for engineered barriers; 2) the designation of an area as unacceptable for use as a geological disposal site if natural resources exist there; and 3) the definitions of TRU and high-level waste. I would like to address each of these areas of concern.

The WIPP Project considers it inappropriate to require engineered barriers arbitrarily if it can be demonstrated that waste can be safely emplaced in geologic media without consideration of waste form, site geologic characteristics, release mechanisms, etc. It is our opinion that an examination of the long-term release pathways and scenarios should be presented for review by the public and appropriate local, state and federal agencies. Engineered barriers should be required only if analyses indicate that they are necessary.

The analyses reported by the EPA in the Draft Environmental Impact Statement for 40 CFR 191 clearly show there is no obvious benefit to be realized from engineered barriers in a bedded salt repository. For example, the projected number of health effects over a 10,000 year period is essentially constant for canister lifetimes in the range from 100-5000 years. This requirement for engineered barriers is unnecessarily costly, and inconsistent with ALARA and the basic safety and environmental protection concept of justifying requirements based on an evaluation of costs and benefits.

In addition, the consequences of long-term releases from the WIPP have been evaluated. These analyses (Reference 1) show that the first evidence of release of radioactivity at the assumed release point approximately 25 km from the repository occurs at least 10^5 years after repository breach occurs. Extending the time before release by using an engineered barrier with a lifetime several orders of magnitude shorter (less than 10^3 years) introduces an additional cost with no corresponding benefit to public health and safety.

For WIPP, the only credible scenario that projects a release with even a slight impact on the public health and safety is human intrusion. Since engineered barriers to preclude human intrusion would be prohibitively expensive or perhaps impossible to design, the engineered barriers must be intended to mitigate the release following human intrusion. For TRU waste, the only method of mitigation which does appear cost justified is emplacement of the barrier between various storage areas. However, in the analysis of the impact of drilling two holes into the WIPP storage area, with a pressurized brine pocket acting as the driving force for release, it was determined (Reference 2) that after a period of less than 250 years the salt waste matrix has sufficient integrity such that releases were limited to portions of the contents of a single storage area. Thus, even for human intrusion events, it does not appear that engineered barriers are cost justifiable.

The second area of concern deals with prohibiting the location of a geological disposal site in an area where there has been mining for

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natural resources, where there is a reasonable expectation of exploration for scarce or easily accessible resources in the future, or where there is a significant concentration of any material which is not widely available from other sources. These restrictions could be construed to rule out most bedded and domed salt formations for permanent isolation of radioactive wastes, since such areas frequently contain hydrocarbons and other useful resources.

The fact that mining has taken place in an area should not automatically rule out an area from consideration, anymore than in the case where cultural resources exist which can be avoided or protected. The area being mined may be well above or below the projected disposal area and have little or no impact on the integrity of the disposal site. This section of the proposed rule is overly restrictive.

The elimination of sites where there is potential for future resource exploration could effectively eliminate the entire U.S. The fact that a small probability of human intrusion for resource recovery exists should not eliminate a site from consideration. These types of scenarios have been analyzed in the WIPP Final Environmental Impact Statement, the WIPP Safety Analysis Report, and in the analysis of the impact of a brine release from beneath the Site as a result of human intrusion (Reference 2). The results project no significant impact on the public health and safety.

As an example of accommodating future needs to access natural resources, the Department of Energy has developed an interim policy on resource recovery at the WIPP Site. This policy provides for resource recovery underneath the Site under certain conditions. A copy of this policy is attached to this testimony. Establishing such a policy is consistent with the DOE statement in their letter to EPA dated May 2, 1983 that "site selection factors are more appropriately a responsibility of DOE and NRC, . . . " Resource recovery should be considered in safety and environmental assessments of a potential site and should be discussed in

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an Environmental Impact Statement or licensing document, but should not be arbitrarily specified as part of a standard regulating releases from nuclear waste repositories.

The Project's third area of concern is the definition of high-level and TRU waste. It is essential that the dividing line between these two materials be clearly delineated to allow decomation of appropriate disposal merhods. The currently proposed description can be interpreted to include [10 waste under the definition of high-level waste. This seems inappropriate, since these waste types have different properties. and have been treated historically as separate waste types. They are also perceived by the public to represent different levels of risk. High-level waste is generally characterized by short half-lives, high heat generation rates and high external exposure rates. TRU waste is characterized by extremely long half-lives, low heat generation rates, low external exposure rates, and high internal deposition hazards. These characteristics are clearly very different and require different designs for cost effective isolation of those materials from the accessible environment. The definition of these two waste types must clearly recognize these differences. The definition of high-level waste recommended by DOE in their May 2, 1983 letter provides this distinction. Further, a clear separation of the two waste types will resolve the concern of the State of New Mexico that high-level waste may be stored at WIPP, without any dilution of the protection provided the public at other potential repository sites.

Finally, there is an item that the Project believes requires further clarification in the proposed rule, and it is the failure to define short-lived isotopes (e.g., Pu-241), which produce long-lived TRU daughter products, as TRU materials. It seems appropriate, when assessing compliance with the proposed rule, that the amount of these materials be considered in evaluating the total TRU activity content of a repository. An appropriate method of inclusion may be to determine the maximum TRU daughter inventory which will exist and then include this

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activity in the total inventory for the disposal site. Failure to consider this type of material produces an apparent inconsistency in the rule and seems to require zero release from a disposal site which only contains Pu-241.

As a representative of the WIPP Project, I wish to thank the Board for the opportunity to present this testimony today. Although WIPP is exempt from licensing by the Nuclear Regulatory Commission, and although under additing legislation no high-level waste will be permanently emplaned in the facility, the public and the State of New Mexico may well judge WIPP's acceptability by making comparisons with NRC requirements, as well as evaluating WIPP's compliance with EPA regulations. The Project concludes that 40 CFR 191 should be modified to include only those criteria which directly impact public health and safety. The agency responsible for selecting a site should be required to demonstrate in supporting documentation that the presence or absence of factors which may impact the acceptability of a site (e.g., resource recovery, engineered barriers, etc.) do not result in releases above those specified by the rule.

REFERENCES

- Marchetti, S., <u>Dose Consequence of Repository Failure and Leach</u> <u>Events for the Waste Isolation Pilot Plant</u>, TME 3066, Waste Isolation Pilot Plant, Dept. of Energy, Albuquerque, NM, November 1980.
- Woolfolk, S. W., <u>Radiological Consequences of Brine Release by</u> <u>Human Intrusion into WIPP</u>, TME 3151, Waste Isolation Pilot Plant, Dept. of Energy, Albuquerque, NM, July 1, 1982.

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