

State of New Mexico
ENERGY, MINERALS and NATURAL RESOURCES DEPARTMENT
Santa Fe, New Mexico 87505

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WIP*



February 22, 1994



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

Mr. J. William Gunter, Director
Criteria and Standards Division
U.S. Environmental Protection Agency
Washington, D.C. 20460

Dear Mr. Gunter:

Thank you for the opportunity to review the "Draft Compliance Criteria for the Waste Isolation Pilot Plant (40 CFR 194)." Comments on the draft Criteria were solicited in your cover memorandum of January 28, 1994, which accompanied a copy of the draft.

The following comments are submitted on behalf of the State of New Mexico's Radioactive Waste Consultation Task Force. The Task Force was created by statute in 1979 (Laws of New Mexico 1979, Chapter 380; Section 74-4A-6 NMSA 1978). It is composed of the Cabinet Secretaries of the Energy, Minerals and Natural Resources Department; Environment Department; Department of Public Safety; Highway and Transportation Department; Department of Health; and the Taxation and Revenue Department. In addition, the Chairman and Vice-Chairman of the joint interim Radioactive and Hazardous Materials Committee of the New Mexico State Legislature serve as advisory members.

The duties of the Task Force are set out in Section 74-4A-7 NMSA 1978, a copy of which is attached for your review. As can be seen, the statute specifies the Task Force "...shall negotiate for the State with the federal government in all areas relating to the siting, licensing and operation of new federal disposal facilities, including research, development and demonstration, for high-level radioactive wastes, transuranic radioactive wastes and low-level radioactive wastes." Consequently, the Waste Isolation Pilot Plant (WIPP) Project and related activities fall within the purview of the Task Force.

Significantly, Section 17 of the WIPP Land Withdrawal Act of 1992 (Public Law 102-579) authorizes the State of New Mexico (State) to evaluate and publish analyses of WIPP operations, activities and related issues, including compliance with EPA regulations. Within the context of this and other sections of the WIPP Act, the State is represented by the Governor or the Governor's designee. With respect to the WIPP Project, the Governor has designated the Chairman of the New Mexico Radioactive Waste Consultation Task Force as his authorized representative.

VILLAGRA BUILDING - 408 Galisteo
Forestry and Resources Conservation Division
P.O. Box 1948 87504-1948
827-5830

Park and Recreation Division
P.O. Box 1147 87504-1147
827-7465

2040 South Pacheco
Office of the Secretary
827-5950

Administrative Services
827-5925

Energy Conservation & Management
827-5900

Mining and Minerals
827-5970

LAND OFFICE BUILDING - 310 Old Santa Fe Trail
Oil Conservation Division
P.O. Box 2088 87504-2088
827-5800

940203



COMMENTS ON THE DRAFT COMPLIANCE CRITERIA FOR WIPP, 40 CFR 194

The draft Criteria represent a conscientious effort to provide a mechanism for the U.S. Department of Energy to demonstrate WIPP compliance with 40 CFR 191. Nevertheless, we believe substantive revisions to the Criteria as presented are in order.

The comments of the New Mexico Radioactive Waste Consultation Task Force are provided in three parts: general comments, individual responses to the three questions posed in your memorandum of January 28, and specific comments on the draft.

GENERAL COMMENTS

Performance assessments are mathematical models and, as such, are capable of incorporating any concept which can be expressed as a probability. This is feasible whether probabilities are representative of measurable occurrences or not. It is intuitive that algorithms modeling real occurrences are more representative than algorithms modeling occurrences which cannot be known. Therefore, the representativeness of any performance assessment (PA) model will decrease as data elicited by consensus is incorporated.

WIPP performance assessments published to date have integrated both empirical values and elicited values. This approach enables an assessment of currently measurable conditions as well as estimates of future outcomes within one seamless algorithm. It is incumbent upon EPA to ensure 40 CFR Part 194 requires the highest degree of representativeness possible in order to preclude dilution of the PA model's integrity, and to retain consistency with 40 CFR Part 191.

QUESTION 1

Passive Institutional Controls

The contribution of any passive institutional controls applied at WIPP in order to reduce the likelihood of human intrusion during the term of regulation would be broadly dependent upon the nature of specific controls applied. Moreover, these would be difficult to capture in a single regulatory statement.

Markers

Regulatory assumptions concerning the effectiveness of future controls at WIPP as a result of efforts to mark the site require a degree of speculation. This uncertainty appears to be consistent with the letter of 40 CFR 191.13 if passive controls are to be considered a "significant process," and the performance of any markers placed at the site was reasonably expected to meet the numeric bounds noted in the Standard and its appendices.

The questions of process significance and reasonableness of expectation appear to be the salient ones for EPA with respect to markers. If the intent of incorporating a marker system is to deter inadvertent intrusion during the period of regulation, markers should be considered a part of the disposal system if it can be reasonably expected, based on known structural technology, that such a contribution can endure for the full term of regulation. A probability representing such an expectation should be possible given known engineering practice.

Public Records and Archives

As the New Mexico Environmental Evaluation Group (EEG) has noted, institutional controls presently managed by the various entities with jurisdiction over gas and oil operations have been demonstrated to be less than robust in accounting for all drilling activity in the vicinity of the WIPP site. Any assumptions in the Criteria concerning a positive contribution from these controls would be highly speculative, if not ill-advised, because these controls would largely function beyond the influence of the Department.

QUESTION 2

Quality Assurance

Data Collection

At a glance, data requirements should embrace the fact that data processing technologies are very dynamic over time. Any data applied to a determination of compliance should be durable, broadly recoverable, robustly archived and maintained in standards which are widely recognized. Data generation and transmission methods should be redundant in order to assure uninterrupted data collection, particularly with respect to linkages between experimental apparatus and the performance assessment models, for extended periods (well beyond disposal operations for data relating to environmental monitoring).

Other commenters with specific expertise in information systems design should hold sway on this topic.

Waste Characterization

Efforts to characterize materials intended for disposal at WIPP have not been insignificant. This undertaking appears, however, to be in a rather rudimentary state as of this writing. DOE must characterize large volumes of materials which display considerable heterogeneity. This process has been hindered by the fact the materials in question have in many cases been cast off and are not uniformly accounted for.

Guidance concerning the assurance measures and requirements listed in the draft Criteria [pgs. 14-15, (b)] should be developed with concurrence from qualified management science (operations research) experts who are experienced with industrial operations representative of the scale of the nuclear weapons complex.

Assurance of data characterization quality should be pursued by EPA at generator sites and not attempted after materials are transported to WIPP.

Compliance Assessment

Quality assurance requirements for data relating to an assessment of compliance will have a profound effect on the structure of WIPP performance assessment documents released after the Criteria are finalized. Considerable guidance from preliminary performance assessments can be expected to guide operations at WIPP prior to any DOE application for a disposal decision from EPA. It is difficult to shape an instrument designed to provide any answer without fully understanding all of the inputs required to generate the answer; particularly if the instrument is also intended to define its own inputs. This iterative performance assessment is indeed intended to perform these functions at different points in its maturity.

The final PA should be a fully integrated model and should be structured in a manner which allows easy discrimination between empirical data and elicited data. In this manner, the more representative portions of the model can be viewed separately from the more speculative portions. (See pg. 2 of these comments, **General Comments**)

Specific guidance relating to data quality, particularly as it applies to data elicitation, should be provided by the Criteria. Expert panels should be utilized only to identify probabilities which cannot currently be known. Panel composition should include entities with expertise in the topics to be advanced. Broad representation on these panels should be required, as it will be virtually impossible to reproduce or validate their work.

The draft Criteria include a considerable amount of guidance concerning the eligibility of individuals to serve. We feel a more defensible Criteria document would, instead, provide similarly detailed guidance on **participant expertise, panel process and deliverables**. Furthermore, panels should be asked to reach consensus on min/max probabilities, with values representing the arithmetic average applied to the model.

QUESTION 3 **Compliance**

EPA should use these Criteria to provide a tangible, reproducible measure of repository performance which an applicant can seek to attain in a manner which is meaningful to EPA, the public, and the applicant.

Appropriateness of the Mean

We believe mean values would be suitable for a certification or determination of compliance with 40 CFR Part 191, if their calculation is derived from a statistically significant number of model runs.

300 CCDF Sample

We are unsure of the statistical or regulatory meaning of this value, and presume it represents a statistically significant number linked to a desired confidence interval. If this is indeed the case, requiring a number of this sort could preclude additional conservatism which could be pursued by an applicant desiring to run a performance assessment model additional times as it seeks to build confidence in a mean distribution cited in an application to the Administrator.

We recommend as an alternative that EPA consider naming a required confidence interval here. However, we would not support the imposition of any confidence interval which is less than ninety-five percent (95%).

SPECIFIC COMMENTS ON THE DRAFT

Pages 4-6, "Conditions of compliance certification," Subsection (b).

This subsection (b) states that any certification or determination is subject to modification, suspension, or revocation, by rule, by the Administrator. However, the draft does not provide any specific information as to the nature and extent of any such modifications, suspensions, or revocations. There is also a lack of specificity regarding the process to be used by EPA to modify, suspend or revoke a compliance certification or compliance determination, except that it will be done "by rule." The addition of clarifying language is warranted and should be included here.

Page 13, "Quality Assurance."

It is unclear whether a separate quality assurance plan must be prepared and submitted for each of the eight items listed. Specific guidance should be provided.

Page 15, Subsection (5)(c).

Implementation of quality assurance (QA) programs is proposed to be verified by EPA through select observation and audits of "quality assurance operating procedures." However, there is no requirement for the QA plans, called for earlier in this section, to include any detailed "operating procedures." Any successful audit must have as its foundation a clear understanding between the parties as to what specifically will serve as the basis for the audit.

Page 18, Subsection (c)(1). Reference: **"statistically representative"**

We believe the required degree of representativeness should be stated explicitly and included here. This may be a required confidence interval, an assertion that the sampled population of values is statistically normal coupled with a maximum analysis of variation value, or another numeric determination of statistical significance which is appropriate to the data stream in question. This guidance should be included in the Criteria in a manner which would enable EPA to reproduce any asserted values.

Page 23, Subsection (c)(1). Reference: **"exploratory activities"**

This is ambiguous. We recommend a specific listing or listings of exploratory activities be named. Viable archives might include those maintained by the Oil Conservation Division of the New Mexico Energy, Minerals and Natural Resources Department, the New Mexico State Land Office, and the federal Bureau of Land Management.

Page 23, Subsection (c)(2). Reference: **"average rate of drilling"**

This value should be a weighted average. Utilization of a weighted average will help to capture actual drilling frequency and should add representativeness to the model.

Page 23, Subsection (c)(2). Reference: **"sum of the rates"**

We believe "sum" should be replaced by mean. Utilization of an arithmetic average (mean) value should generate a rate in the manner currently indicated by the draft Criteria.

Page 24, "Compliance," Subsection (a). Reference: **"all significant processes"**

This is ambiguous. The Criteria should list the processes deemed significant by EPA to any determination of compliance.

Pages 27-29, "Engineered barriers."

The guidance provided by Secretary Anita Lockwood of the New Mexico Radioactive Waste Consultation Task Force to the WIPP Subcommittee of the National Advisory Council for Environmental Policy and Technology (NACEPT) at their September 1993 meeting continues to be ignored in these draft Criteria, and should be addressed.

To reiterate, use of engineered barriers to achieve compliance is mandated by the WIPP Land Withdrawal Act [Sec. 8(g)], 40 CFR Part 191.14(d), as well as the Agreement for Consultation and Cooperation on WIPP between the State of New Mexico and the U.S. Department of Energy [Second Modification, 1987; Sec. (E)(3)]. While incorporation of barriers or modification of the waste form may be necessary for WIPP to come into compliance with 40 CFR Part 191, it would be imprudent to assume yet another regulatory writing will provide greater compliance by the applicant. Further, the current language in

the draft Criteria does not serve to provide clarity, or favorable benefit relative to costs of application preparation.

Subsection (c) (Evaluation of barrier alternatives) is massively complicated and its execution by an applicant will not produce tangible guidance to EPA to support an evaluation of compliance. This section is ill-considered, deficient and cannot be repaired in its current state. Language should be substituted to reflect the following:

Only hard, modeled, numeric results from preliminary performance assessment runs will provide justification for use of barriers or waste form modifications.

At some time prior to final application, a statistically significant number of CCDFs which do not take credit for any contributions from barriers or modifications should be run. If these results indicate a reasonable expectation the disposal system will not provide compliance, and the applicant desires to pursue certification, it would be the responsibility of the applicant to determine, in consultation with the Administrator or the Administrator's representative, the degree of additional disposal system integrity required to achieve compliance with the Standard.

This degree of additional system integrity will provide solid engineering design criteria to be met by one or more of the methods listed in section (b), pg. 27 of the draft Criteria.

Determinations of cost or benefit accruing from pursuit of added measures are strictly the concern and domain of the applicant.

Page 29, "Consideration of presence of resources." Subsection (a)(ii)

This subsection appears to seek to gain information from an applicant which would contribute to a determination by EPA of compliance with 40 CFR Part 191. The language in the draft "Criteria" is ambiguous and could be clarified by including a reference to 40 CFR 191.14.

Page 30, "Consideration of underground sources of drinking water." Ref: "interconnections between bodies of surface water, ground water, etc."

This section demonstrates a clear desire to protect drinking water sources, but is vague and does not provide a firm degree of guidance as to what comprises an "interconnection." Entities with **experience** and expertise in hydrology should hold sway in proposing language to achieve this critical regulatory outcome.

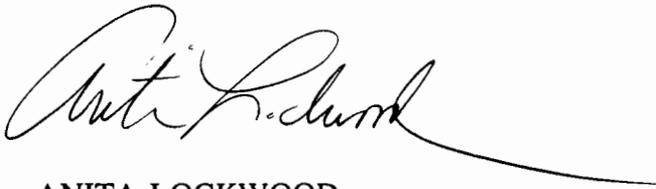
Page 31, "Advance Notice of Proposed Rulemaking." Subsection (c) Reference: "at least"
The desired comment period length should be specified here.

Page 32, "Notice of Proposed Rulemaking." (b) "at least"
The desired comment period length should be specified here.

Page 33, "Documentation of Continued Compliance." (c) "at least"
The desired comment period length should be specified here.

Thank you for the opportunity to provide our comments and recommendations on the draft Compliance Criteria for WIPP. Please contact Jim Firkins or Chris Wentz of my staff at 505/827-5950 should you have any questions about these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Anita Lockwood", with a long horizontal flourish extending to the right.

ANITA LOCKWOOD
Chairman
Radioactive Waste Consultation Task Force
State of New Mexico

c: Governor Bruce King
Task Force Cabinet Secretaries

Attachments (1)