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SD-901-1

Department of Energy
 Washington, D.C. 20545

March 3, 1980



MEMORANDUM FOR Mr. Samuel Chilk
 Secretary, Nuclear Regulatory Commission
 Attention: Docketing and Service Branch
 Washington, D.C. 20555

The Department of Energy (DOE) is pleased to submit comments on the Nuclear Regulatory Commission's (NRC) proposed rules, "Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedures" that were published in the Federal Register on December 6, 1979, 44FR236, pages 70408 through 70421.

As noted in the background information in the Federal Register Notice, the proposed rule departs from the previous proposed General Statement of Policy in that additional review of the Department's plans for site characterization is required in advance of any formal licensing proceedings by the Commission. The Department believes it appropriate to describe what procedures it intends to follow in order to implement the Presidential policy statement of February 12, 1980 in performing site characterization activities and to examine in what way the proposed NRC rule would permit the implementation of this program.

As directed by the President, the Department intends to conduct site investigation and characterization studies in widely diverse geologic environments and potential host rocks and to qualify four to five such sites in widely diverse environments prior to selecting a specific preferred site to be the basis of a formal license application to the Commission. The Department is presently conducting site investigations in several distinct geologic regions of the country and intends shortly to seek State participation in expanding investigations to more diverse media in several additional regions.

Investigation of various geologic regions will sequentially lead to identification of several potential repository locations in each region. At the time that characterization of these several potential locations is sufficient to allow preferential attention to two or three locations within a region, the Department intends to prepare a Site Characterization Plan which will include 1) a description of the two or three sites in the region to be characterized, 2) a description of the proposed site characterization program and 3) the criteria and method used to arrive at preferred sites for characterization. An Environmental Assessment will also be prepared to support the designation of preferred sites for detailed characterization.

The Department intends to prepare this site characterization plan in cooperation with State and local officials who will have been invited to participate in a consultation and concurrence process in cooperation with the Department from the beginning of the site evaluation process in each region, to conduct public hearings near to locations under consideration and to provide copies of appropriate documents in public document rooms in communities near to proposed sites. The Department proposes to submit this Site Characterization Plan and Environmental Assessment to the Director of the Office of Nuclear Material Safety and Safeguards for review by the Commission staff.

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Following conduct of the detailed characterization work on the two to three most preferred sites in a given region, the Department believes that sufficient data will be available to determine which site(s) in a given geologic region is most likely to be qualified as a potential site for a geological repository. At this time, the Department would move to protect that site(s) from intrusion that might destroy its viability as a potential site by "banking" the site(s) either in the case of public lands, by proposing administrative land withdrawal to the Bureau of Land Management, or in the case of private land by seeking to acquire from the owner rights sufficient to support a site protection program. At that time, the Department will also determine whether significant additional characterization, perhaps through such means as developing shafts and drifts to allow examination and in-situ testing at the proposed repository horizon, will be required in order to develop sufficient information to support a possible future application for construction authorization to the Commission.

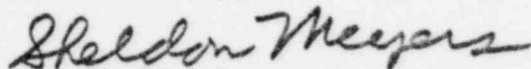
The Department believes that a decision to withdraw or "bank" a potential site or to conduct site characterization by more extensive methods such as sinking a shaft will require the preparation of an Environmental Impact Statement (EIS). The Department intends to notify the Commission of a proposed decision to "bank" or further characterize a preferred site at the time of issuance of the draft EIS and will supply information on further proposed characterization in a supplement to the previously-issued site characterization plan. The Department will solicit Commission review of the proposed decision and proposed additional characterization prior to issuance of the final EIS and implementation of the decision. After further detailed characterization of a preferred site in a region is completed, the Department will prepare a Detailed Site Characterization Report which will be provided to the Commission.

The Department intends to repeat this site characterization process in diverse geologic environments and different host rock media until, as directed by the President, four to five such qualified sites have been identified. At that time the candidate site EIS will be supplemented and a site selection recommendation will be prepared to compare these four to five comparably qualified sites and to choose from among them the one or more sites that will become the basis for license application to the Commission. This decision will be made in close consultation with governments of States and localities that would be affected by the results of the decision.

The Department believes that this process fully implements the directions of the President in his statement of February 12, 1980, complies fully with all requirements of the National Environmental Policy Act, provides full opportunity for State and local consultation and concurrence, and provides for public participation in the decision-making process. In our opinion, the pre-licensing process proposed in the draft rule introduces unnecessary and redundant elements into an otherwise sound program for geologic investigations and determinations of site suitability. For example, the proposal by NRC to conduct public meetings to review the Department's site characterization plans seem to be unnecessary since the Department will be conducting similar meetings. The Department requests that these areas of the proposed Commission rule which are inconsistent with the Department's responsibilities for site investigations, consultation and concurrence with the States and determination of suitable sites be amended to allow for implementation of the Department's program of site qualification prior to formal application for licensing.

The remaining procedures of the proposed rule which deal with post-application licensing by the Commission appear appropriate for implementation. We do have a number of minor changes or clarifications in these procedures which are included in the enclosed detailed comments.

Sincerely,

A handwritten signature in cursive script that reads "Sheldon Meyers".

Sheldon Meyers
Deputy Assistant Secretary
for Nuclear Energy

2 Enclosures

SPECIFIC COMMENTS ON THE SUPPLEMENTARY INFORMATION TO
THE NRC PROPOSED RULE ON LICENSING REPOSITORIES

I. SITE CHARACTERIZATION REPORT

DOE agrees with and supports the concept of early informal interaction with the NRC staff on the DOE plans to gather detailed technical information on potential candidate sites for a repository. The proposed Site Characterization Report (SCR) as described in paragraph 60.11 seems an appropriate vehicle for this interaction, although "Site Characterization Plan" might be a more appropriate title. However, as noted in the transmittal letter, DOE has some concerns about some of the specifics, as well as lack of specifics, in the proposed rule for implementation of this concept.

DOE has been involved in a program to identify candidate sites for some time and some potential candidate sites have been partially characterized including both geophysical techniques and deep exploratory boreholes. Our future plans call for extensive site characterization activities in numerous provinces and regions being conducted in close cooperation with State authorities as indicated in the Presidential guidance (See Presidential statement of February 12, 1980). This guidance will be further elaborated on in the President's instructions to DOE to be issued shortly. The proposed rule, however, could be interpreted to preclude DOE's implementation of Presidential policy by halting DOE's site characterization activities and National Environmental Policy Act reviews pending completion of an open-ended review by the Director of the Office of Material Safety and Safeguards. The final rule should state clearly that DOE may proceed with such activities and reviews during the director's review of the site characterization activities.

II. EXPLORATORY SHAFTS

Although the proposed rule does not specifically require an exploratory shaft as part of the site characterization program, the Preamble, as well as public statements by NRC officials, indicates that an exploratory shaft will be required at all candidate sites. The final rule should specify the information needed to support the safety findings of 60.31, but not prejudice the techniques necessary to obtain it. DOE should devise the characterization program necessary to obtain the specified information for individual sites and describe that program in the SCR. The SCR and the resulting interactions will provide the forum for discussion of the pros and cons of the various investigatory techniques.

We believe that the NRC staff seriously underestimated the cost of exploration at depth. The staff estimated that "based upon typical mining practices" the cost of site characterization would be "around \$10 million" but due to the extensive quality assurance that would be required at a repository and the potential for more extensive testing, the staff recommended "a figure of \$20 million to be a safe upper bound." Some of the areas where the staff has not evaluated fully the costs are:

1. The staff estimated only one shaft, four feet in diameter, 3000 feet deep. We believe that because of the depth and narrowness of the shaft and the nature of the testing, prudence would dictate that a second shaft and connecting drift be constructed for emergency escape.
2. The staff estimated that a room 20 feet by 20 feet by 8 feet would be constructed at the bottom of the shaft. We believe that such a room would be far too small to drill horizontal borings necessary to conduct meaningful in situ testing.
3. The staff cost estimate only included costs for thermal testing.
4. The staff cost estimate does not appear to include the costs of a Quality Assurance Program conforming to the requirements of 10CFR50, Appendix B.

Our estimate of the costs to perform meaningful exploration at depth is between \$60 and \$100 million for each site.

III. CONSIDERATION OF ALTERNATE SITES

The proposed rule is somewhat hazy about the relative roles of DOE and NRC in the site selection process. A reader could infer that DOE is presenting a number of alternates from which NRC will select the preferred site, as is done in some State siting programs. The Preamble should make it clear that DOE has programmatic responsibility to select the site. NRC's role is to license or decline to license a repository at the site.

SPECIFIC COMMENTS ON NRC PROPOSED
RULE ON LICENSING REPOSITORIES

I. 10CFR51.40(d)

(a) NRC Proposed Wording:

(d) The Department of Energy (DOE), as an applicant for a license to receive and possess radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, shall submit at that time of its application or in advance, and at the time of amendments, in the manner provided in Section 60.22 of this chapter, environmental reports which discuss the matters described in Section 51.20. The discussion of alternatives shall include site characterization data for a number of sites in appropriate geologic media so as to aid the Commission in making a comparative evaluation as a basis for arriving at a reasoned decision under NEPA.

(b) Recommend Revision:

Insert "if required" after "and at the time of amendments".

(c) Rationale:

It is expected that there will be many amendments to the License Application during the review process. An update to the ER should only be required if the amendment invalidates some part of the ER.

II. 10CFR60.2(b); 60.11(a)(1)

(a) NRC Proposed Wording:

- (1)environment of a site.
- (2) A description of the site(s).

(b) Recommended Revision:

Provide in subsection 60.2 a definition of "site" which should mean a portion of land on the order of a few square kilometers with a geo-hydrologic setting potentially appropriate for mined geologic disposal whose boundaries roughly coincide with the repository operations area and an appropriate surrounding control zone.

(c) Rationale:

The proposed licensing procedures refer to repository "sites" and repository "candidate areas." It is not clear whether these terms are interchangeable, or whether they imply physical size differences. In addition, while "candidate areas" is defined in § 60.2(a), it is nonetheless ambiguous; i.e., does it refer to the broad expanse of an entire selected repository medium or to a more localized portion of a selected medium?

For example, relative to basalts, does "candidate area" refer to Columbia Plateau basalts, the Pasco Basin basalts, specific basalt flows, or other more localized events or areas?

III. 10CFR60.2(a)

(a) NRC Proposed Wording:

"Candidate area" means a geologic and hydrologic system within which a geologic repository may be located.

(b) Recommended Revision:

The definition of "candidate area" should be: a portion of land on the order of thousands of square kilometers identified through a site screening process as containing geologic and hydrologic systems warranting further study leading towards the identification of mined repository sites.

(c) Rationale:

The definition as presented is too vague. DOE uses the term to mean an area of approximately 1000 square miles which are studied to identify potential candidate locations.

IV. 10CFR60.2(e)

(a) NRC Proposed Wording:

(e) "Disposal" means permanent emplacement within a storage space with no intent to retrieve for resource values.

(b) Recommended Revision:

- (1) Change "storage space" to "repository".
- (2) Delete "for resource values".

(c) Rationale:

- (1) Storage implies intent to remove.
- (2) Disposal means no intent to retrieve for any reason.

V. 10CFR60.2(g)

(a) NRC Proposed Wording:

(g) "Geologic Repository means a system which is intended to be used for, or may be used for, the disposal of radioactive wastes in excavated geologic formations. A geologic repository includes (1) the geologic repository operations area and (2) all surface and subsurface areas where natural events or activities of man may change the extent to which wastes are effectively isolated from the biosphere.

(b) Recommended Revision:

Delete "natural events or".

(c) Rationale:

Natural events can be postulated that would, by the proposed definition, extend the bounds of the repository for hundreds or thousands of miles, far beyond any useful application of the term "geologic repository."

VI. 10CFR60.2(i)

(a) NRC Proposed Wording:

(i) "High-level radioactive waste" or "HLW" means (1) irradiated reactor fuel, (2) liquid wastes resulting from the operation of the first cycle solvent extraction system, or equivalent, and the concentrated wastes from subsequent extraction cycles, or equivalent, in a facility for reprocessing irradiated reactor fuel, and (3) solids into which such liquid wastes have been converted.

(b) Recommended Revision:

Insert "intended for disposal" after "irradiated reactor fuel".

(c) Rationale:

This provision defines irradiated reactor fuel to be HLW. A change in the current National policy on reprocessing could render the definition invalid.

VII. 10CFR60.2(n)

(a) NRC Proposed Wording:

"Site characterization" means the program of exploration and research, both in the laboratory and in the field, undertaken to establish the geologic conditions and the ranges of those parameters of a particular site relevant to the procedures under this part. Site characterization includes borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing, if needed, to determine the suitability of the site for a geologic repository, but does not include preliminary borings and geophysical testing needed to decide whether site characterization should be undertaken.

(b) Recommended Revision:

The definition should be sharpened to more clearly identify at what point in the site screening process the Site Characterization Report is required.

(c) Rationale:

The definition as presented provides no clear basis on which to differentiate between testing needed to decide whether site characterization should be undertaken and site characterization itself.

VIII. 10CFR60.3(a)

(a) NRC Proposed Wording:

(a) The Department shall not receive or possess for the purpose of disposal source, special nuclear, or byproduct material at a geologic repository operations area except as authorized by a license issued by the Commission pursuant to this part.

(b) Recommended Revision:

Change "part" to "chapter".

(c) Rationale:

As written, it would preclude DOE from possessing any radioactive material licensed under other parts of Title 10 until the 10CFR60 license is received. This would exclude such things as radiography sources and radiation monitor test sources. Note: The combination of 60.2(i), 60.2(h) and 60.3(a) would prohibit construction and operation of an AFR storage facility at a repository site prior to issuance of the part 60 license.

IX. 10CFR60.11 Site Characterization Report (a)(4) and (6).

(a) NRC Proposed Wording:

(a)(4) the method by which the site(s) was selected for site characterization; (a)(6) a description of the decision process by which the site(s) was selected for characterization, including the means used to obtain public and State views during selection:

(b) Recommended Revision:

Delete (a)(4), renumber as appropriate.

(c) Rationale:

Redundancy of requirements. (a)(6) is more definitive.

X. 10CFR60.21 (b)(3)

(a) Commission Proposed Wording:

(3) A certification that the Department will provide at the geologic repository operations area such safeguards as it requires at comparable surface facilities....

(b) Recommended Revision:

Define "comparable surface facility" or restructure paragraph.

(c) Rationale:

Geologic repository operations areas are unique.