

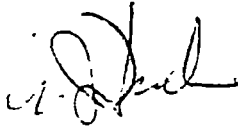
UNITED STATES  
NUCLEAR REGULATORY COMMISSION  
WASHINGTON, D. C. 20555

October 17, 1980

SECY-80-474

**CONSENT CALENDAR ITEM**

For: The Commissioners

From: Robert B. Minogue, Director  
Office of Standards Development 

Thru: William J. Dircks, Executive Director for Operations

Subject: FINAL RULE - 10 CFR PART 60, "DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC REPOSITORIES - LICENSING PROCEDURES"

Category: Consent Calendar Item

Purpose: To request Commission approval to publish in final form that part of 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories," dealing with Licensing Procedures.

Discussion: In November 1978, the Commission published for comment a proposed General Statement of Policy which set forth proposed procedures for licensing geologic repositories for the disposal of high-level radioactive wastes (HLW). In December 1979, the Commission published for comment a proposed rule 10 CFR Part 60, "Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedures." The proposed rule addressed only the licensing procedures. The technical criteria of 10 CFR Part 60 are currently under development by the staff.

The provisions of the proposed rule generally comported with the proposed General Statement of Policy. As with the Policy Statement, the procedures of the proposed rule were divided into four steps: pre-licensing review, a licensing review prior to construction, a second licensing review prior to receipt of wastes, and a final review prior to decommissioning. However, the proposed rule did depart from the specific procedures of the proposed Policy Statement with respect to the nature and extent of exploratory activities which can be carried out at a site prior to authorization of construction. Moreover, the proposed rule provided for such activities at a number of sites prior to final selection of a site for a repository. The public comment period on the proposed rule expired on March 3, 1980.

A total of thirty-four groups and individuals commented on the proposed rule, addressing a variety of issues. Most of the commenters viewed the proposed rule as a significant improvement over the proposed General Statement of Policy, and, generally, the comments were supportive of the principles and procedures outlined in the proposed rule. The principal comments related to site characterization, in situ testing at depth, cost estimates for site characterization, whether the rule should require that

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the site selected by DOE be the "best", whether an environmental impact statement (EIS) should be required for site characterization, whether the Commission should prepare an EIS for this rule-making action, the opportunities for State, local and public participation, public hearings, the preliminary nature of some of the information, and termination of a license following decommissioning. It should be noted that most comment letters addressed these major policy issues, rather than the actual text of the proposed rule. Arguments were presented on all sides of the major issues, but none were compelling enough to cause the staff to alter its recommendations in any substantive way. Hence, this paper is presented to the Commission as a consent calendar item. However, since this rule and the comments received deal with major policy questions, the Commission may wish to take special note of the public comments received on the proposed rule and the changes which the staff recommends be made in the rule. The rule, as revised, is presented in Enclosure "A" with comparative text to show the changes from the proposed rule. A synopsis of the comments and a discussion of the changes which the staff recommends be made in the rule are provided in the preamble of the draft Federal Register Notice in Enclosure "A".

Recommendation:

That the Commission:

1. Approve publication in final form of that part of 10 CFR Part 60 "Disposal of High-Level Radioactive Wastes in Geologic Repositories," dealing with licensing procedures, and accompanying Supplementary Information as found in the draft Federal Register Notice in Enclosure "A", without the comparative text.
2. Note
  - a. That a synopsis of the major issues addressed in the comment letters and the discussion of the changes which the staff recommends be made in the rule is presented in the preamble of the draft Federal Register Notice in Enclosure "A".
  - b. That detailed staff responses to public comments on the proposed rule are contained in Enclosure "B".
  - c. That no environmental impact statement will be prepared in connection with this action. The environmental impact appraisal which accompanied the Commission paper on the proposed rule has been updated in accordance with the Commission request of December 12, 1979. This updated appraisal is provided as Enclosure "C".

Since preparing the updated environmental impact appraisal, the staff has come to believe that an underground test facility consisting of two shafts and up to 1,000 feet of tunnels may be more practical for site characterization than the original concept of a single shaft with a test room at its base. The staff is evaluating the increment of increased environmental impact with this new concept and will forward that evaluation to the Commission shortly. The Commission should note that regardless of the extent of any underground test facility, the impacts will be necessarily much less than those from repository construction and that there is precedent from reactor licensing to allow environmental impacts to accrue where necessary to collect data for determining site suitability. Whether this precedent is applicable to this case may depend upon the magnitude of the impacts of underground testing at depth.

- d. That the Subcommittee on Energy and the Environment of the House Interior and Insular Affairs Committee, the Subcommittee on Nuclear Regulation of the Senate Committee on the Environment and Public Works, the Subcommittee on Energy, Nuclear Proliferation and Federal Services of the Senate Committee on Governmental Affairs, and the Subcommittee on Energy and Power of the House Interstate and Foreign Commerce Committee will be informed.
- e. That a public announcement such as the draft provided as Enclosure "D" will be issued upon filing of the notice of final rulemaking with the Office of the Federal Register.
- f. That the detailed staff analysis of the State Planning Council's comments on the proposed rule will be forwarded to the Commission as an addendum, and that a copy of this analysis will be sent to the State Planning Council upon Commission approval.
- g. That additional ministerial changes in style and format may be made in the proposed Federal Register notice to conform to the recently revised Federal Register "Document Drafting Handbook" (June 1980).

Coordination:

The Offices of Nuclear Material Safety and Safeguards, and Inspection and Enforcement concur in the recommendations of this paper. The Executive Legal Director has no legal objection. The draft public announcement was prepared by the Office of Public Affairs.

*Robert B. Minogue*

Robert B. Minogue, Director *10/15/80*  
Office of Standards Development

Enclosures:

- "A" - Notice of Rulemaking
- "B" - Staff Analysis of Public Comments  
Received on the Proposed Rule
- "C" - Updated Environment Impact Appraisal
- "D" - Draft Public Announcement

Commissioners' comments or consent should be provided directly to the Office of the Secretary by c.o.b. Friday, October 31, 1980.

Commission Staff Office comments, if any, should be submitted to the Commissioners NLT October 24, 1980, with an information copy to the Office of the Secretary. If the paper is of such a nature that it requires additional time for analytical review and comment, the Commissioners and the Secretariat should be apprised of when comments may be expected.

This paper is tentatively scheduled for <sup>affirmation</sup>~~consideration~~ at an open/closed meeting during the week of November 3, 1980. Please refer to the appropriate Weekly Commission Schedule, when published, for a specific date and time.

DISTRIBUTION

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ENCLOSURE "A"

NUCLEAR REGULATORY COMMISSION

[10 CFR PARTS 2, 19, 20, 21, 30, 40, 51, 60, AND 70]

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES

Licensing Procedures

AGENCY: Nuclear Regulatory Commission.

ACTION: Final Rule.

SUMMARY: The Nuclear Regulatory Commission is publishing a final rule on the disposal of high-level radioactive wastes at geologic repositories (10 CFR Part 60, and conforming amendments). The rule sets forth requirements applicable to the Department of Energy in submitting an application for a license for such activities and specifies the procedures which the Commission will follow in considering such an application. The rule also sets forth provisions for consultation and participation in the license review by State, local and Indian tribal governments.

DATES: Effective date: (to be 30 days after publication in the FEDERAL REGISTER)

FOR FURTHER INFORMATION CONTACT:

I.C. Roberts, Assistant Director for Siting Standards, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443-5985.

SUPPLEMENTARY INFORMATION:

Background

In December 1979, the Nuclear Regulatory Commission published for comment a proposed rule setting forth procedures for licensing geologic

high-level radioactive waste (HLW) repositories to be constructed and operated by the Department of Energy (DOE). (44 FR 70408) The proposed rule superseded the proposed General Statement of Policy published for comment in November 1978. (43 FR 53869) Public comment on the proposed rule (10 CFR Part 60) was received from thirty-four groups and individuals. The rule that is the subject of this notice does not differ significantly from the proposed 10 CFR Part 60, although several clarifications have been made in the rule as a result of comments received. This rule contains only the procedural requirements for licensing. The technical criteria against which the license application will be reviewed are still under development. The current staff thinking on the technical criteria was reflected in an Advance Notice of Proposed Rulemaking and draft technical criteria published for public comment in May 1980. (45 FR 31393)

#### Authority and Rationale

Sections 202(3) and (4) of the Energy Reorganization Act of 1974, as amended, provide the NRC with licensing and regulatory authority regarding DOE facilities used primarily for the receipt and storage<sup>1</sup> of the high-level radioactive wastes resulting from activities licensed under the Atomic Energy Act and certain other long-term, high-level waste storage facilities of the DOE. Pursuant to that authority, the Commission is promulgating regulations appropriate for licensing geologic disposal of HLW by the DOE. The requirement in the rule that DOE submit a site characterization report in advance of performing exploration (which

<sup>1</sup>The Commission interprets "storage" as used in the Energy Reorganization Act to include disposal.

may include in situ testing at depth) also implements Section 14(a) of the NRC Authorization Act of 1979 (Pub. L. 95-601).<sup>2</sup> DOE is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository, and for submitting a license application for a potential repository. The licensing procedures in this rule will be supplemented by technical criteria which will be developed by the Commission in the light of such generally applicable environmental standards as may have been established by the Environmental Protection Agency under Reorganization Plan No. 3 of 1970.

#### Comments

A total of thirty-four groups and individuals commented on the proposed rule, addressing a variety of issues. Most of the commenters viewed the proposed rule as a significant improvement over the proposed General Statement of Policy, and, generally, the comments were supportive of the principles and procedures outlined in the proposed rule. The principal comments received relate to multiple site characterization, in situ testing at depth, cost estimates for site characterization, whether the rule should require that the site selected by DOE be the "best", whether an environmental impact statement (EIS) should be required for site

<sup>2</sup>Section 14(a) reads as follows: Any person, agency, or other entity proposing to develop a storage or disposal facility, including a test disposal facility, for high-level radioactive wastes, non-high-level radioactive wastes including transuranium contaminated wastes, or irradiated nuclear reactor fuel, shall notify the Commission as early as possible after the commencement of planning for a particular proposed facility. The Commission shall in turn notify the Governor and the State legislature of the State of proposed situ whenever the Commission has knowledge of such proposal.



characterization, whether the Commission should prepare an EIS for this rulemaking action, opportunities for State, local and public participation, formal public hearings, the preliminary nature of some information to be included in an application for construction authorization, and the termination of a license following decommissioning. Summaries of the comments received on these issues are presented below. Copies of the comments and an analysis of them by the NRC staff are available in the Commission's Public Document Room. Some of the commenters raised issues that will be covered in the technical criteria; those will be dealt with in connection with the ongoing rulemaking for those criteria.

a. Site Characterization. Comments on site characterization straddled the Commission position set forth in the proposed rule. Some commenters agreed with the requirement for multiple site characterization as presented in the proposed rule. Some commenters expressed the opinion that multiple site characterization was not required for the Commission to fulfill its NEPA obligation to consider alternative proposals. The Commission has carefully reviewed arguments presented by the commenters who stated that multiple site characterization is not necessary. The Commission continues to believe that required multiple site characterization provides the only effective means by which it can make a comparative evaluation as a basis for arriving at a reasoned decision under NEPA. Other commenters believe that the requirements for multiple site characterization were not stringent enough, and suggested that the rule specify the number of geologic media and sites to be characterized by the DOE. The Commission continues to believe that characterization of several sites will prevent a premature commitment by DOE to a particular site, and will assure that DOE's preferred site will be chosen from a slate of candidate

sites that are among the best that can reasonably be found. The Commission considers three sites in two geologic media to be the minimum number needed to satisfy NEPA. However, the Commission does not believe that it would be appropriate for the rule to specify the number of geologic media and sites that DOE must characterize during multiple site characterization. What is important is that there be sufficient information for NRC to be able to evaluate real alternatives, in a timely manner, in accordance with NEPA. (Information on plans for considering alternative sites is to be included in the Site Characterization Report. This provision was questioned by some commenters. This information is needed so that any deficiency may be the subject of a "specific recommendation" by the Director of the NRC's Office of Nuclear Material Safety and Safeguards, (Director) as provided in §60.11(e), with respect to additional information that might be needed by the Commission in reviewing a license application in accordance with NEPA. The NRC also continues to believe that waste form research is an appropriate topic for treatment in the site characterization report, as the discussion may lead to specific recommendations by the Director, and, as well, contribute to early examination and broader understanding of possible waste form host rock interactions.) Further, wording of §60.11(a) has been changed from "waste form" to "waste form and packaging" to better convey that the NRC was seeking information relating to the interaction of the waste as emplaced (hence including packaging) with the host rock.

In response to one commenter's suggestion that the site characterization report be made to NRC on a site by site basis, §60.11(a) has been revised to require DOE to submit a separate site characterization report for each site to be characterized.

There were also suggestions that the distinction between site characterization and screening activities be drawn more sharply. However, because the activities needed prior to characterization may depend on a variety of factors peculiar to the site and geologic medium, the NRC has concluded that greater precision might be unduly restrictive.

The DOE requested clarification of the term "site". A definition of the term site will be set forth in the technical criteria.

b. In Situ Testing at Depth. Several commenters supported the Commission view on in situ testing at depth. Some commenters, noting the importance of in situ testing at depth, suggested that the rule require the DOE to include in situ testing at depth in its site characterization program. Several other commenters objected to the Commission suggestion that in situ testing at depth may be necessary. The possibility of in situ testing at depth after a preferred repository site has been selected was also suggested. The Commission continues to believe that in situ testing at depth<sup>3</sup> is probably an essential technique for DOE to obtain sufficient data to determine whether and to what extent the surrounding geologic medium is suitable for hosting a geologic repository. Moreover, in order for NRC to be able to conclude that the alternatives to DOE's preferred site are in fact reasonable alternatives for the intended purpose, in situ testing at depth is probably essential to characterizing alternative sites as well. The NRC will then be able to determine, after considering all relevant environmental factors as

<sup>3</sup>The Commission interprets the phrase "in situ testing at depth" to mean the conduct of those geophysical, geochemical, hydrologic, and/or rock mechanics tests performed from a test area at the base of a shaft excavated to the proposed depth of a potential repository in order to determine the suitability of a particular site for a geologic repository.

contemplated by NEPA, whether a construction authorization at DOE's proposed site should be issued.

However, the Commission does not categorically require in situ testing at depth in the rule, since it is conceivable that in some instances at a particular site the data needed to establish that the site is suitable to host a repository may be obtained without in situ testing at depth. DOE, like any applicant for an NRC license, has the burden of establishing that NRC requirements have been met, and the regulations require DOE to undertake any testing needed to determine the suitability of the site for a geologic repository. Thus, if DOE chose not to explore at depth it would not be relieved in any way of the burden of obtaining and supplying to the Commission information needed to establish the suitability of the site.

c. Cost Estimates for Site Characterization. Cost estimates for site characterization cited in the supplementary information accompanying the proposed rule were regarded by some commenters as being too low. Much of the data for the cost estimate of \$20 million per site was derived from the Teknekron Inc. report, "A Cost Optimization Study for Geologic Isolation of Radioactive Wastes," May 1979, prepared under contract with Battelle Pacific Northwest Laboratories. The NRC staff has reexamined its previous estimate and still believes that figure of \$20 million was a realistic estimate for the "at depth" portion of the site characterization program considered at that time. Independent support of this figure has been obtained from the cost summary of \$16 million for a program analogous to site characterization conducted by the Bureau of Mines at its Environmental Research Facility in Colorado during 1978-1979.

The DOE has developed a preliminary design for an underground test facility in New Mexico at which many site characterization activities could be conducted. The estimated cost of the facility was \$27 million (1980 dollars). This figure has been confirmed by the American Mine Services under contract to NRC. The scope of the DOE preliminary design surpasses the extent of activities suggested for the "at depth" portion of site characterization in the proposed rule. For example, the DOE Site Preliminary Verification Project Plan includes extensive underground mining development. The staff has come to believe, however, that a facility consisting of two shafts and up to 1,000 feet of tunnels is a more practical arrangement for conducting tests and experiments at depth for site characterization. Therefore, the staff believes the \$27 million figure represents the upper limit for the "at depth" portion of site characterization in soft rock. Cost estimates for site characterization including in situ testing at depth in hard rock may range up to 30% more than cost figures for soft rock.

d. The "Best" Site. Some commenters suggested that the final rule should require that the site selected by the DOE be the "best". Yet other commenters thought that the Commission was setting an unattainable goal of perfection for the selection of the site for a geologic repository. It remains the Commission's view that the process of multiple site characterization provides a workable mechanism by which the DOE will be able to develop a slate of candidate sites that are among the best that can reasonably be found and from which DOE will select its preferred site.

It generally has been NRC practice to consider only whether a license application meets prescribed criteria. The Commission perceives no reason to adopt a different philosophy here.

e. Environmental Impact Statement. Some commenters believed that the NRC should require that the DOE submit an environmental impact statement (EIS) at the site characterization stage. Other commenters believed that DOE need only submit an Environmental Report or an Environmental Assessment for site characterization. In its comment letter on the proposed rule, the DOE stated that a decision to bank or withdraw a site or to conduct a site characterization by more extensive methods such as sinking a shaft will require the preparation of an EIS. In any event, since NRC is undertaking no "major Federal action" in connection with site characterization, it has no statutory basis for prescribing what steps DOE must take in order to be in compliance with NEPA.

The rule requires submission of an environmental report along with the safety analysis report. If DOE has prepared an environmental impact statement, that document can be used so long as it contains the information called for in the regulation. However, NRC cannot be bound to accept judgments arrived at by DOE in its environmental impact statement.

One commenter suggested that the NRC should prepare an EIS for the rulemaking action. The Commission determined that this was not necessary as part of its review and approval of publication of the proposed rule. Instead an environmental impact appraisal was prepared for those requirements which might have environmental impacts. These impacts were not found to be significant. This environmental impact appraisal has recently been updated and no new impact was found to be significant. A copy of the updated appraisal is available for inspection and copying at the Commission's Public Document Room.

f. State, Local, and Public Participation. The proposed rule included detailed provisions to ensure extensive opportunities for participation by

State, and local governments and the general public in the review of the DOE's programs for site selection and site characterization. The consultation role of the States in reviewing applicable NRC regulations and licensing procedures, as well as participation in the licensing process, was treated explicitly in the proposed rule. However, a more formal role of consultation and concurrence for States was requested by some commenters. Suggestions were also made that the Commission require the DOE to solicit input from State, Indian tribal and local governments as well as from the general public prior to and during site characterization.

The Commission's views on this subject were set out at length in a report submitted to the Congress on "Means for Improving State Participation in the Siting Licensing and Development of Federal Nuclear Facilities" NUREG-0539, March 1979, cited in the supplementary information accompanying the proposed rule. The concerns of the commenters on broad policy issues such as consultation and concurrence would require actions by parties other than the Commission. Within the context of NRC's existing authority, appropriate opportunities for meaningful State and public participation have been developed. No serious deficiencies in these opportunities have been pointed out to the NRC. It should be noted, however, that proposals for intervenor funding have not been incorporated as suggested by some commenters. This question may be addressed separately in the context of rulemaking applicable to various adjudicatory proceedings, should the Commission be given statutory authority, which it now lacks, to provide such funding.

In response to commenters' suggestions, the rule has been clarified with respect to notice to, and participation by Indian tribes.

g. Public Hearings. The issue of whether public hearings should be mandatory during the pre-licensing and/or licensing stages of geologic

disposal of HLW was addressed by a number of commenters. Two commenters suggested that hearings be required prior to site characterization. One commenter suggested that public hearings should be held in the vicinity of a proposed site prior to the approval of a Site Characterization Report, while another commenter suggested that hearings be held prior to in situ testing at depth. It was also proposed by another commenter that public hearings be held on DOE's research and development work on waste forms. Finally, two other commenters believed that formal hearings should be mandatory prior to granting construction authorization to DOE. The NRC has considered the possibility of hearings prior to site characterization, and continues to maintain its position as set forth in the Notice of Proposed Rulemaking at 44 FR 70409 that with respect to a geologic repository, reconnaissance level data alone will not support a presumption that a site is suitable with respect to safety for a repository. Hence, any decision on alternative site issues at this early point is likely to require reexamination at the construction authorization proceedings and, therefore, would be of questionable value.

However, the NRC has considered the advisability of public hearings at the construction authorization stage, has determined that such hearings are required in the public interest and has included provisions for mandatory public hearings prior to granting construction authorization (10 CFR 2.104). In addition, hearings will be held upon the request of any interested person prior to finally granting a license to receive and possess high-level radioactive waste at a geologic repository operations area and before granting license amendments to decommission or terminate a license.

h. Preliminary Nature of the Information to be Included in an Application for Construction Authorization. A number of commenters



expressed the opinion that the wording of §60.21 did not explicitly reflect the preliminary nature of some of the information that would be available at the construction authorization stage. Some commenters believed that some categories of information, such as emergency plans and plans for retrieval did not seem necessary, at least in full detail, at the construction authorization stage. In view of the fact that §60.21 must be read in conjunction with §60.24(a), which specifies that the application "shall be as complete as possible in light of information that is reasonably available at the time of docketing," no change to the proposed rule is required. Further, §60.24(b) specifically lists several categories of information which, where appropriate, may be left for consideration only at the stage of license issuance.

i. Termination of a License. Two commenters opposed the provisions (§60.52) for the termination of a license for a repository after decommissioning. The NRC believes that there will be considerable debate regarding license termination during the period between adoption of rules and implementation of their provisions. Although the NRC could have omitted the topic altogether, it believes that some recognition of the issue is desirable so that the rule covers the entire process. It should be noted that there is no assurance under the language that the license would be terminated since a decision to do so could only be made if "authorized by law."

### Changes

The final rule contains the following changes from the proposed rule as published in December 1979.

a. Definition of the term "Disposal". Commenters noted that the proposed definition of the term "disposal" embodied the contradictory concepts of "permanent emplacement" and possible retrieval for purposes

other than resource value. The definition has been modified to reflect usage of the term "disposal" in the rule to characterize the condition in which isolation is required. (§60.2(e))

b. Incidental Uses of Radioactive Materials. The DOE noted that the proposed rule could have the effect of prohibiting the use of source, special nuclear, and byproduct materials at the site during site characterization and facility construction. The DOE referred to the desirability of being able to use such materials, for example as radiography sources and radiation monitor test sources. There may also be a need to employ a small amount of radioactive material for in situ testing in the course of site characterization activities.

The Commission did not intend to restrict DOE's use of radioactive materials for the stated purposes, and has clarified the point by adding a new section, §60.7, which expressly recognizes that DOE (which is exempt from NRC licensing except as expressly required to be licensed) need not be licensed for such preliminary activities. This is not an exemption under the exemption provisions of the Atomic Energy Act, but rather an interpretation of the Commission's jurisdiction under Section 202 of the Energy Reorganization Act of 1974. In other words, the "facility" that the NRC is licensing is one at which high-level radioactive wastes are actually stored. To the extent that the procedures call for earlier NRC involvement, that involvement would be undertaken with a view to long-term health and safety considerations; but during site characterization and prior to emplacement of waste, there would be no "facility" for storage of high-level waste and no basis.

Once operations at a facility have been licensed, the Commission believes it should regulate the use of all licensable materials onsite, so as to avoid fragmentation of responsibility and accountability with respect to radiological safety (particularly as it may affect occupational exposures).

The change does not respond to the DOE's additional concern that the proposed rule would prohibit construction and operation of a surface facility for the storage of spent reactor fuel at a repository site prior to issuance of a Part 60 license. Should this situation actually arise in practice, the Commission would consider granting an exemption so as to permit licensing to be carried out under other parts of NRC regulations.

c. Site Characterization Report. One commenter on the proposed rule suggested that the description of the DOE's planned site characterization program include a preliminary design of the repository. Knowledge of the proposed design would help indicate how the testing program related to the repository layout. The Commission has made it explicit that the site characterization report include a conceptual design of the geologic repository operations area. This is needed so as to permit analysis of certain aspects of the site characterization program. (§60.11(a).)

The provisions of §60.11(g) have been changed to require DOE to permit NRC staff to visit and inspect the site and observe excavations, borings, and in situ tests as they are done. The NRC believes that such a requirement is essential for NRC to determine that site characterization activities have no adverse impacts upon site safety.

The proposed rule contained provisions which would permit the DOE to include multiple sites in a single site characterization report. In response to public comment, and for the sake of clarity, the final rule

requires a separate site characterization report for each site to be characterized.

The Commission reiterates that the site characterization report will be reviewed by the NRC staff with opportunity for public comment on both the report and a staff analysis of the report. Also, the Commission continues to anticipate that it will hold local public hearings in the immediate area of the site to be characterized. These meetings will be held both to disseminate information and to obtain public input which will be factored into the final version of the staff analysis.

The period for comment on the NRC's draft site characterization analysis has been extended from a minimum of 60 days to a minimum of 90 days in response to public comment. (§60.11(e))

The provision concerning semiannual progress reports has been expanded so as to provide additional guidance to the DOE on the contents of those reports. (§60.11(g).)

d. Construction Authorization Findings. The necessary findings by the Commission on environmental matters (§60.31(c)) have been revised to conform to the language in other portions of the Commission's regulations. Contrary to the views expressed by a commenter, the Commission regards this provision as being fully consistent with the requirements of NEPA.

The Commission has declined to modify the common defense and security finding as suggested by one commenter. The Commission's review of the history of the Energy Reorganization Act of 1974 indicates that NRC's review was deemed to be important to protect the health and safety of the public; the Commission thinks it is appropriate to rely upon DOE to take action to protect the common defense and security inasmuch as it shares with NRC such responsibilities under the Atomic Energy Act.

e. Conditions of Construction Authorization. The final rule specifies (§60.32(b)) that the construction authorization "will incorporate" conditions requiring the submission of certain periodic or special reports. This wording differs from that of the proposed rule which stated that the Commission "may, at its discretion incorporate" these conditions. The NRC agrees with a commenter that such reports will be needed and that there is no reason to reserve discretion, as the proposed rule would have done. The particulars of the conditions would, of course, depend upon the nature of the project that is to be constructed.

f. License Specifications. The Commission has accepted a suggestion to delete a requirement for including, as license conditions, restrictions as to the location and characteristics of the storage medium. As noted by a commenter, these features may be inherent in the storage medium itself.

g. Inspections. The final rule contains a provision (§60.73(c)) requiring DOE to provide on site office space for the exclusive use of NRC inspectors and personnel.

h. Participation of Indian Tribes. Several changes have been made in the rule to provide for full participation by Indian tribes in the licensing procedures. These changes generally provide that tribes shall have the same opportunities as governmental units. A new Section 60.64 provides that Indian Tribes shall have the same opportunities as States to submit proposals for their participation in the NRC review. These proposals shall be approved (and may be funded) if appropriate findings can be made concerning the contribution to be made of the licensing review. A new Section 60.65 makes it clear, however, that the Director shall endeavor to avoid duplication of effort when acting on multiple proposals, to the

extent that this can be accomplished without substantial prejudice to the parties involved.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, Public Law 95-601 (November 6, 1978), the National Environmental Policy Act of 1969, as amended, and sections 552 and 553 of title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations are published as a document subject to codification.

## PART 2

### RULES OF PRACTICE

1. 10 CFR 2.101 is amended to add a new subsection (f) to read as follows:<sup>1</sup>

§2.101 Filing of application.

\* \* \* \* \*

(f)(1) Each application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter and any environmental report required in connection therewith pursuant to Part 51 of this chapter shall be processed in accordance with the provisions of this paragraph.

(2) To allow a determination as to whether the application or environmental report is complete and acceptable for docketing, it will be initially treated as a tendered document, and a copy will be available for public inspection in the Commission's Public Document Room. Twenty copies shall be filed to enable this determination to be made.

<sup>1</sup>As compared to text of proposed rule additions are underscored and deletions are bracketed and lined through.

(3) If the Director of Nuclear Material Safety and Safeguards determines that the tendered document is complete and acceptable for docketing, a docket number will be assigned and the applicant will be notified of the determination. If it is determined that all or any part of the tendered document is incomplete and therefore not acceptable for processing, the applicant will be informed of this determination and the respects in which the document is deficient.

(4) With respect to any tendered document that is acceptable for docketing, the applicant will be requested to (i) submit to the Director of Nuclear Material Safety and Safeguards such additional copies as the regulations in Parts 60 and 51 require, (ii) serve a copy on the chief executive of the municipality in which the geologic repository operations area is to be located or, if the geologic repository operations area is not to be located within a municipality, on the chief executive of the county (or to the Tribal organization, if it is to be located within an Indian reservation), and (iii) make direct distribution of additional copies to Federal, State, Indian Tribe, and local officials in accordance with the requirements of this chapter and written instructions from the Director of Nuclear Material Safety and Safeguards. All such copies shall be completely assembled documents, identified by docket number. Subsequently distributed amendments, however, may include revised pages to previous submittals and, in such cases, the recipients will be responsible for inserting the revised pages.

(5) The tendered document will be formally docketed upon receipt by the Director of Nuclear Material Safety and Safeguards of the required additional copies. The date of docketing shall be the date when the required copies are received by the Director of Nuclear Material Safety

and Safeguards. Within ten (10) days after docketing, the applicant shall submit to the Director of Nuclear Material Safety and Safeguards a written statement that distribution of the additional copies to Federal, State, Indian Tribe, and local officials has been completed in accordance with requirements of this chapter and written instructions furnished to the applicant by the Director of Nuclear Material Safety and Safeguards.

Distribution of the additional copies shall be deemed to be complete as of the time the copies are deposited in the mail or with a carrier prepaid for delivery to the designated addressees.

(6) Amendments to the application and environmental report shall be filed and distributed and a written statement shall be furnished to the Director of Nuclear Material Safety and Safeguards in the same manner as for the initial application and environmental report.

(7) The Director of Nuclear Material Safety and Safeguards will cause to be published in the FEDERAL REGISTER a notice of docketing which identifies the State and location at which the proposed geologic repository operations area would be located and will give notice of docketing to the governor of that State.

2. 10 CFR 2.103(a) is revised to read as follows:

§2.103 Action on applications for byproduct, source, special nuclear material, and operator licenses.

(a) If the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, finds that an application for a byproduct, source, special nuclear material, or operator license complies with the requirements of the Act, the Energy Reorganization Act, and this chapter, he will issue a license. If the license is



for a facility or for receipt of waste radioactive material from other persons for the purpose of commercial disposal by the waste disposal licensee, or if it is to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, will inform the State, Indian Tribe, and local officials specified in § 2.104(e) of the issuance of the license.

3. 10 CFR 2.104(a) is amended to read as follows:

§2.104 Notice of Hearing.

\* \* \* \* \*

(a) In the case of an application on which a hearing is required by the Act or this chapter, or in which the Commission finds that a hearing is required in the public interest, the Secretary will issue a notice of hearing to be published in the FEDERAL REGISTER as required by law at least fifteen (15) days, and in the case of an application concerning a construction permit for a facility of the type described in §50.21(b) or §50.22 of this chapter or a testing facility, at least thirty (30) days, prior to the date set for hearing in the notice.<sup>2</sup> In addition in the case

<sup>2</sup>If the notice of hearing concerning an application for a construction permit for a facility of the type described in §50.21(b) or §50.22 of this chapter or a testing facility does not specify the time and place of initial hearing, a subsequent notice will be published in the FEDERAL REGISTER which will provide at least thirty (30) days notice of the time and place of that hearing. After this notice is given the presiding officer may reschedule the commencement of the initial hearing for a later date or reconvene a recessed hearing without again providing thirty (30) days notice.

of an application for a construction permit for a facility of the type described in §50.22 of this chapter, or a testing facility, the notice (other than a notice pursuant to paragraph (d) of this section) shall be issued as soon as practicable after the application has been docketed. Provided, That if the Commission, pursuant to §2.101(a)(2), decides to determine the acceptability of the application on the basis of its technical adequacy as well as completeness, the notice shall be issued as soon as practicable after the application has been tendered. The notice will state:

- (1) The time, place, and nature of the hearing and/or prehearing conference, if any;
- (2) The authority under which the hearing is to be held;
- (3) The matters of fact and law to be considered; and
- (4) The time within which answers to the notice shall be filed.

In addition, any notice of hearing published with regard to an application for a license to receive and possess high-level waste at a geologic repository operations area pursuant to Part 60 of this chapter shall provide that the hearing will be held prior to issuance of authorization to construct such geologic repository operations area.

[3:]4. 10 CFR 2.104(e) is amended to read as follows:

§2.104 Notice of hearing.

\* \* \* \* \*

(e) The Secretary will give timely notice of the hearing to all parties and to other persons, if any, entitled by law to notice. The

Secretary will transmit a notice of hearing on an application for a facility license or for a license for receipt of waste radioactive material from other persons for the purpose of commercial disposal by the waste disposal licensee or for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter to the Governor or other appropriate official of the State and to the chief executive of the municipality in which the facility is to be located or the activity is to be conducted or, if the facility is not to be located or the activity conducted within a municipality, to the chief executive of the county (or to the Tribal organization, if it is to be so located or conducted within an Indian reservation).

[4-]5. 10 CFR 2.105(a) is amended by adding a new subparagraph (3), renumbering existing subparagraphs (3) and (4) as (4) and (5), amending the subparagraph renumbered as (4) and adding an undesignated final paragraph to read as follows:

§2.105 Notice of proposed action.

(a) If a hearing is not required by the Act or this chapter, and if the Commission has not found that a hearing is in the public interest, it will, prior to acting thereon, cause to be published in the FEDERAL REGISTER a notice of proposed action with respect to an application for:

\* \* \* \* \*

(3) A license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter;

(4) An amendment of a license specified in paragraph (a)(1), (2), or (3) of this section and which involves a significant hazards consideration; or

(5) Any other license or amendment as to which the Commission determines that an opportunity for a public hearing should be afforded.

In the case of an application for an operating license for a facility of a type described in §50.21(b) or §50.22 of this chapter or a testing facility, a notice of opportunity for hearing shall be issued as soon as practicable after the application has been docketed.

In the case of an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area, notice of opportunity for hearing, as required by this paragraph, shall be published prior to Commission action authorizing construction and also prior to receipt of wastes at the repository. This change is in addition to the changes proposed in the prior notice.

[5:]6. 10 CFR 2.105(e) is amended by replacing the words "will issue the license" with the words "may take the proposed action" following the phrase "...or Director of Nuclear Material Safety and Safeguards, as appropriate," and by adding the words "or other action" following the phrase "...published in the FEDERAL REGISTER a notice of issuance of the license."

[6:]7. 10 CFR 2.106 is amended by adding a subsection (c) to read as follows:

§2.106 Notice of issuance.

\* \* \* \* \*

(c) The Director of Nuclear Material Safety and Safeguards will also cause to be published in the FEDERAL REGISTER notice of, and will inform the State and local officials specified in §2.104(e) of, any action with respect to an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, or for the amendment of such license, for which a notice of proposed action has been previously published.

#### PART 19 - NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS; INSPECTIONS

##### §19.2 Scope.

~~[7-]~~8. 10 CFR 19.2 is amended by adding "60," following "35, 40,".

##### §19.3 Definitions.

~~[8-]~~9. 10 CFR 19.3(d) is amended by adding "60," following "35, 40,".

#### PART 20 - STANDARDS FOR PROTECTION AGAINST RADIATION

##### §20.2 Scope.

~~[9-]~~10. 10 CFR 20.2 is amended by adding "60," following "35, 40,".

##### §20.3 Definitions.

~~[10-]~~11. 10 CFR 20.3(a)(9) is amended by adding "60," following "30, 40,".

##### §20.301 General Requirement.

~~[11-]~~12. 10 CFR 20.301(a) is amended by adding "60," following "30, 40,".

~~[12-]~~13. 10 CFR 20.408(a) is amended by deleting the word "or" following the phrase "of this chapter;" in subparagraph (a)(3), inserting the word "or" following the phrase "of the following quantities:" in subparagraph (a)(4), and adding a new subparagraph (a)(5) to read as follows:

§20.408 Reports of personnel monitoring on termination of employment or work.

\* \* \* \* \*

(5) Possesses high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

#### PART 21 - REPORTING OF DEFECTS AND NONCOMPLIANCE

##### §21.2 Scope

~~[13-]~~14. 10 CFR 21.2 is amended by inserting "60," after "35, 40," and also by inserting "60," after "40, 50,".

##### §21.3 Definitions

~~[14-]~~15. In 10 CFR Part 21, Sections 21.3(a), 21.3(a)(a-1)(1), 21.3(a)(a-1)(2), and 21.3(k) are amended by adding "60," after "40, 50,".

##### §21.21 Notification of failure to comply or existence of a defect.

~~[15-]~~16. 10 CFR 21.21(b)(1)(i) and 21.21(b)(1)(ii) are amended by adding "60," after "40, 50,".

PART 30 - RULES OF GENERAL APPLICABILITY TO LICENSING  
OF BYPRODUCT MATERIAL

~~[16:]~~17. 10 CFR 30.11 is amended by adding a new subsection (c).

§30.11 Specific exemptions.

\* \* \* \* \*

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

PART 40 - DOMESTIC LICENSING OF SOURCE MATERIAL

~~[17:]~~18. 10 CFR 40.14 is amended by adding a new subsection (c).

§40.14 Specific exemptions.

\* \* \* \* \*

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

PART 51 - LICENSING AND REGULATORY POLICY AND PROCEDURES  
FOR ENVIRONMENTAL PROTECTION

~~[18:]~~19. 10 CFR 51.5(a) is amended by adding new paragraphs (10) and (11), and renumbering present paragraph (10) as paragraph (12) to read as follows.

§51.5 Actions requiring preparation of environmental impact statements, negative declarations, environmental impact appraisals; actions excluded.

(a) An environmental impact statement will be prepared and circulated prior to taking any of the following types of actions:

\* \* \* \* \*

(10) Issuance of a construction authorization for a geologic repository operations area pursuant to Part 60 of this chapter.

~~[(11)--Issuance-of-a-license-to-receive-and-possess-high-level-radio-active-waste-at-a-geologic-repository-operations-area-pursuant-to-Part-60-of-this-chapter.]~~

~~[(12)]~~(11) Any other action which the Commission determines is a major Commission action significantly affecting the quality of the human environment.

~~[19-]~~20. 10 CFR 51.5(b) is amended by: replacing the period at the end of subparagraph (4)(iii) with a semicolon; adding a new subparagraph (4)(iv); substituting (iv) for (iii) in paragraph (5); inserting "60," following "40, 50," in paragraph (6); and adding [a] new paragraphs (9) and (10). With these changes, 10 CFR 51.5(b) reads as follows:

\* \* \* \* \*

§51.5(b)(4) Issuance of an amendment which would authorize a significant change in the types or significant increase in the amounts of effluents or a significant increase in the potential for accidental releases of a license for:

\* \* \* \* \*



(iv) The receipt and possession of high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

\* \* \* \* \*

(5) Renewal of licenses to conduct activities listed in paragraph (b)(4)(i)(iv) of this section;

\* \* \* \* \*

(9) Termination of a license for the possession of high-level radioactive waste at a geologic repository operations area at the request of the licensee.

(10) Issuance of a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

~~[20-]~~21. 10 CFR 51.5(d)(3) is amended by adding "60," following "40, 50,".

~~[21-]~~22. 10 CFR 51.40 is amended by revising subsection (a) to start "Except as provided in paragraphs (b), (c), and (d) of this section,..." and by adding a new subsection (d) to read as follows:

§51.40 Environmental reports.

\* \* \* \* \*

(d) The 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 the time of its application or in advance, and at the time of amendments, in the manner provided in §60.22 of this chapter, environmental reports which discuss the matters described in §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. [\*] The Commission considers the characterization of three sites representing two geologic media to be the minimum necessary to satisfy the requirements of NEPA. However, in light of the significance of the decision selecting a site for a repository, the Commission fully expects the DOE to submit a wider range of alternatives than the minimum suggested here.

[22-]23. 10 CFR 51.41 is amended to read as follows:

§51.41 Administrative procedures.

Except as the context may otherwise require, procedures and measures similar to those described in §§51.22-51.26 will be followed in proceedings for the issuance of materials licenses and other actions covered by §51.5(a) but not covered by §51.20 or 51.21. The procedures followed with respect to materials licenses will reflect the fact that, unlike the licensing of production and utilization facilities, the licensing of materials does not require separate authorizations for construction and operation. In the case of an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, however, the environmental impact statement required by §51.5(a) shall be prepared and circulated prior to the issuance of a construction authorization; the environmental impact statement shall be supplemented prior to issuance of a license to

~~[\*To satisfy the requirements of NEPA, the Commission anticipates such characterization at a minimum of three sites representing a minimum of two geologic media. However, in light of the significance of the decision selecting a site for a repository, the Commission fully expects the Department to submit a wider range of alternatives than the minimum suggested here.]~~

take account of any substantial changes in the activities proposed to be carried out or significant new information regarding the environmental impacts of the proposed activities.

24. A new Part 60 is added to read as follows:

PART 60 - DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES

SUBPART A - GENERAL PROVISIONS

Section

- 60.1 Purpose and scope.
- 60.2 Definitions.
- 60.3 License required.
- 60.4 Communications.
- 60.5 Interpretations.
- 60.6 Exemptions.
- 60.7 License not required for certain preliminary activities.

SUBPART B - LICENSES

PREAPPLICATION REVIEW

- 60.11 Site characterization report.

LICENSE APPLICATIONS

- 60.21 Content of application.
- 60.22 Filing and distribution of application.

- 60.23 Elimination of repetition.
- 60.24 Updating of application and environmental report.

CONSTRUCTION AUTHORIZATION

- 60.31 Construction authorization.
- 60.32 Conditions of construction authorization.
- 60.33 Amendment of construction authorization.

LICENSE ISSUANCE AND AMENDMENT

- 60.41 Standards for issuance of a license.
- 60.42 Conditions of license.
- 60.43 License specifications.
- 60.44 Changes, tests, and experiments.
- 60.45 Amendment of license.
- 60.46 Particular activities requiring license amendment.

DECOMMISSIONING

- 60.51 License amendment to decommission.
- 60.52 Termination of license.

SUBPART C - PARTICIPATION BY STATE GOVERNMENTS AND  
INDIAN TRIBES

- 60.61 Site review.
- 60.62 Filing of proposals for State participation.
- 60.63 Approval of proposals.
- 60.64 Participation by Indian tribes.
- 60.65 Coordination.

SUBPART D - RECORDS, REPORTS, TESTS, AND INSPECTIONS

- 60.71 Records and reports.
- 60.72 Tests.
- 60.73 Inspections.

Authority: Secs. 51, 53, 62, 63, 65, 81, 161b., f., i., o., p., 182, 183, Pub. L. 83-703, as amended, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); Secs. 202, 206, Pub. L. 93-438, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); Sec. 14, P.L. 95-601 (42 U.S.C. 2021a); Sec. 102(2)(c), Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332).

For the purposes of Sec. 223, 68 Stat. 958, as amended, 42 U.S.C. 2273, §§60.71 to 60.73 are issued under Sec. 161o., 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

10 CFR PART 60  
DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES

Subpart A - General Provisions

§60.1 Purpose and scope.

This part prescribes rules governing the licensing of the DOE to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area. This part does not apply to any activity licensed under another part of this chapter.

§60.2 Definitions.

As used in this part:

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

(b) "Commencement of construction" means clearing of land, surface or subsurface excavation, or other substantial action that would adversely affect the environment of a site, but does not include changes desirable for the temporary use of the land for public recreational uses, site characterization activities, other preconstruction monitoring and investigation necessary to establish background information related to the suitability of a site or to the protection of environmental values, or procurement or manufacture of components of the geologic repository operations area.

~~(d)~~(c) [Department]"DOE" means the U.S. Department of Energy or its duly authorized representatives.

~~[(c)]~~(d) "Decommissioning", or permanent closure, means final back-filling of subsurface facilities, sealing of shafts, and decontamination and dismantlement of surface facilities.

(e) "Disposal" means ~~[permanent-emplacment-within-a-storage-space with-no-intent-to-retrieve-for-resource-value]~~ that the Commission has determined that the emplaced wastes are, and will continue to be isolated from the biosphere and there is no need to retrieve them for the protection of the public health and safety.

(f) "Director" means the Director of the U.S. Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards.

(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 radioactive wastes are effectively isolated from the biosphere.

(h) "Geologic repository operations area" means a HLW facility that is part of a geologic repository, including both surface and subsurface areas, where waste handling activities are conducted.

(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.

(j) "HLW facility" means a facility subject to the licensing and related regulatory authority of the Commission pursuant to Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974 (88 Stat 1244).\*

(k) "Indian Tribe" means an Indian tribe as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93-638).

~~(k)~~(l) "Important to safety," with reference to structures, systems, and components, means those structures, systems, and components that provide reasonable assurance that radioactive waste can be received, handled, and stored without undue risk to the health and safety of the public.

~~(k)~~(m) "Public Document Room" means the place at 1717 H Street NW., Washington, D.C., at which records of the Commission will ordinarily be made available for public inspection and any other place, the location of which has been published in the FEDERAL REGISTER, at which public records of the Commission pertaining to a particular geologic repository are made available for public inspection.

~~(m)~~(n) "Radioactive waste" means HLW and any other radioactive materials other than HLW that are received for emplacement in a geologic repository.

(o) "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

\* These are DOE "facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such act [the Atomic Energy Act]" and "Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive wastes generated by [DOE], which are not used for, or are part of, research and development activities."



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 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.

~~[(p)-"Traceability"-means-the-ability,-through-the-use-of-container-identification-and-preparation-and-maintenance-of-appropriate records,-to-delineate-a-step-by-step-history-of-any-radioactive-waste-]~~

(p) "Tribal organization" means a Tribal organization as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93-638).

#### §60.3 License required.

(a) The [Department] DOE shall not receive or possess 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) The [Department] DOE shall not commence construction of a geologic repository operations area unless it has filed an application with the Commission and has obtained construction authorization as provided in this part. Failure to comply with this requirement shall be grounds for denial of a license.

#### §60.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them

should be addressed to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Communications, reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C., or 7915 Eastern Avenue, Silver Spring, Maryland.

#### §60.5 Interpretations.

Except as specifically authorized by the Commission, in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be considered binding upon the Commission.

#### §60.6 Exemptions.

The Commission may, upon application by the [Department] DOE, any interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest.

#### §60.7 License not required for certain preliminary activities.

The requirement for a license set forth in §60.3(a) of this part is not applicable to the extent that the DOE receives and possesses source, special nuclear, and byproduct material at a geologic repository:

(a) For purposes of site characterization; or

(b) For use, during site characterization or construction, as components of radiographic, radiation monitoring, or similar equipment or instrumentation.

Subpart B - Licenses  
Preapplication Review

§60.11 Site characterization report.

(a) As early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization, the [Department] DOE shall submit to the Director a site characterization report. The report shall include ~~[(i)]~~(1) a description of the site~~(s)~~ to be characterized; ~~[(ii)-a-description-of-the-site characterization-program-including-extent-of-planned-excavations;-plans for-in-situ-testing;-investigation-activities-which-may-affect-the ability-of-the-site-to-isolate-wastes;-and-provisions-to-control-any adverse;-safety-related-impacts-from-site-characterization-including appropriate-quality-assurance-programs;--(iii)]~~ (2) the criteria used to arrive at the candidate area~~(s)~~; ~~[(iv)]~~ (3) the method by which the site~~(s)~~ was selected for site characterization; ~~[(v)]~~(4) identification and location of alternative media and sites at which the DOE intends to conduct site characterization and for which the DOE anticipates submitting subsequent site characterization reports; ~~[(vi)]~~(5) a description of the decision process by which the site~~(s)~~ was selected for characterization, including the means used to obtain public, Indian tribal and State views during selection; ~~[and-(vii)-any-issues-related]~~ (6) a description of the site characterization program including (i) the extent of any planned excavation, any plans for in situ testing, (ii) a conceptual design of a repository appropriate to the named site in sufficient detail to allow assessment of the site characterization program with respect to investigation activities which address the ability of the site to host a

repository and isolate radioactive waste, or which may affect such ability,  
and (iii) provisions to control any adverse, safety-related effects from  
site characterization including appropriate quality assurance programs; (7)  
a description of the quality assurance program to be applied to data collec-  
tion; and (8) any issues related to the site selection, alternative candidate  
 areas or sites, or design of the geologic repository operations area  
 which the [Department] DOE wishes the NRC staff to review. [~~The Depart-~~  
~~ment may include multiple sites in a single site characterization report.~~]  
 Also included shall be a description of the research and development  
 activities being conducted by the [Department] DOE which deal with the waste  
 form[s] and packaging which may be considered appropriate for the site[s]  
 to be characterized, including research planned or underway to evaluate  
 the performance of such waste forms.

(b) The Director shall cause to be published in the FEDERAL REGISTER  
 a notice that the information submitted under paragraph (a) of this sec-  
 tion has been received and that a staff review of that information has  
 begun. The notice shall identify the site[~~(s)~~] selected for site charac-  
 terization and alternate areas considered by the DOE and shall advise that  
 consultation may be requested by State and local governments and Tribal  
organizations in accordance with Subpart C of this part. [~~§-68-61~~]

(c) The Director shall make available a copy of the above information  
 at the Public Document Room. The Director also shall transmit copies and  
 the published notice of receipt thereof to the Governor and legislature of  
 the State and to the chief executive of the municipality in which a site  
 to be characterized is located (or if it is not located within a munici-  
 pality, then to the chief executive of the county, or to the Tribal organ-  
ization if it is to be located within an Indian reservation) and to the  
 Governors of any contiguous States.

(d) The Director shall prepare a draft site characterization analysis which shall discuss the items cited in paragraph (a) of this section. The Director shall publish a notice of availability of the draft site characterization analysis and a request for comment in the Federal Register. Copies shall be made available at the Public Document Room. The Director shall also transmit copies to the Governor and legislature of the State and the chief executive of the municipality in which a site to be characterized is located (or if it is not located within a municipality, then to the chief executive of the county, or to the Tribal organization if it is to be located within an Indian reservation) and to the Governors of any contiguous States.

(e) A reasonable period, not less than ~~[60-days]~~ 90 days, shall be allowed for comment on the draft site characterization analysis. The Director shall then prepare a final site characterization analysis which shall take into account ~~comments~~ received and any additional information acquired during the ~~comment~~ period. Included in the final site characterization analysis shall be either an opinion by the Director that he has no objection to the ~~[Department's]~~ DOE's site characterization program, if such an opinion is appropriate, or specific objections of the Director to the ~~[Department's]~~ DOE's proceeding with characterization of the named ~~site(s)~~. In addition, the Director may make specific ~~recommendations~~ to the ~~[Department]~~ DOE on the matters pertinent to this section.

(f) Neither issuance of a final site characterization analysis nor the opinion by the Director shall constitute a commitment to issue any authorization or license or in any way affect the authority of the ~~Commis-~~ sion, the Atomic Safety and Licensing Appeal Board, Atomic Safety and

Licensing Boards, other presiding officers, or the Director, in any proceeding under Subpart G of Part 2 of this chapter. If the [Department] DOE prepares an environmental impact statement with respect to site characterization activities proposed for a particular site, it should consider NRC's site characterization analyses before publishing its final environmental impact statement with respect to site characterization activities proposed for that particular site.

(g) During site characterization, the [Department] DOE should inform the Director by semiannual report of the progress of the site characterization and waste form research and development. ~~[including-schedules-as-appropriate:]~~ The semiannual reports should include the results of site characterization studies, the identification of new issues, plans for additional studies to resolve new issues, elimination of planned studies no longer necessary, identification of decision points reached and modification to schedules where appropriate. Also reported should be the DOE's progress in developing the design of a geologic repository operations area appropriate for the site being characterized, noting when key design parameters or features which depend upon the results of site characterization will be established. During this time, NRC staff ~~[should-]~~ shall be permitted to visit and inspect the site~~(s)]~~ and observe excavations, borings, and in situ tests as they are done. ~~[inasmuch-as-these-site-characterization-activities-could-have-adverse-impact-upon-site-safety;-failure-by-the-Department-to-involve-the-Commission-in-the-manner-described-here-and-to-accommodate-the-recommendations-of-the-Director-could-result-in-denial-of-the-subsequent-license-application:]~~

(h) The Director may respond from time to time in writing to the [Department] DOE, expressing his current views on questions raised in the semiannual reports referred to above. Comments received from States in accordance with §60.61 shall be considered by the Director in formulating his views. All correspondence between the [Department] DOE and the NRC including the reports cited in paragraph (g) shall be placed in the Public Document Room.

(i) The activities described in paragraphs (a) through (h) above constitute informal conference between a prospective applicant and the staff, as described in §2.101(a)(1) of this chapter, and are not part of a proceeding under the Atomic Energy Act of 1954, as amended.

#### License Applications

##### § 60.21 Content of application.

(a) An application shall consist of general information and a safety analysis report. An environmental report shall be prepared in accordance with Part 51 of this chapter and shall accompany the application. Any Restricted Data or National Security Information shall be separated from unclassified information.

(b) The general information shall include:

(1) A general description of the proposed geologic repository identifying the [~~proposed-site~~] location of the geologic repository operations area, the general character of the proposed activities, and the basis for the exercise of licensing authority by the Commission.

(2) Proposed schedules for construction, receipt of waste, and emplacement of wastes at the proposed geologic repository operations area.

(3) A certification that the [Department] DOE will provide at the geologic repository operations area such safeguards as it requires at comparable surface facilities (of the DOE) to promote the common defense and security.

(c) The safety analysis report shall include:

(1) A description and analysis of the site at which the proposed geologic repository operations area is to be located with appropriate attention to those features that might affect facility design and performance. The assessment shall contain an analysis of the geology, geophysics, hydrology, geochemistry, and meteorology of the site and the major design structures, systems, and components, both surface and subsurface, that bear significantly on the suitability of the geologic repository for disposal of radioactive waste. It will be assumed that operations at the geologic repository operations area will be carried out at the maximum capacity and rate of receipt of radioactive waste stated in the application.

(2) A description and discussion of the design, both surface and subsurface, of the geologic repository operations area including: (i) the principal design criteria and their relationship to any general performance objectives promulgated by the Commission, (ii) the design bases and the relation of the design bases to the principal design criteria, (iii) information relative to materials of construction (including geologic media, general arrangement, and approximate dimensions), and (iv) codes and standards that the [Department] DOE proposes to apply to the design and construction of the geologic repository operations area.

(3) A description and analysis of the design and performance requirements for structures, systems, and components of the geologic repository



which are important to safety. The analysis and evaluation shall consider (i) the margins of safety under normal conditions and under conditions that may result from anticipated operational occurrences, including those of natural origin; (ii) the adequacy of structures, systems, and components provided for the prevention of accidents and mitigation of the consequences of accidents, including those caused by natural phenomena; and (iii) the effectiveness of engineered and natural barriers, including barriers that may not be themselves a part of the geologic repository operations area, against the release of radioactive material to the environment.

(4) A description of the quality assurance program to be applied to the design, fabrication, inspection, construction, testing, and operation of the structures, systems, and components of the geologic repository operations area important to safety.\*

(5) A description of the kind, amount, and specifications of the radioactive material proposed to be received and possessed at the geologic repository operations area.

(6) An identification and justification for the selection of those variables, conditions, or other items which are determined to be probable subjects of license specifications. Special attention shall be given to those items that may significantly influence the final design.

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\* The criteria in Appendix B of Part 50 of this chapter will be used by the Commission in determining the adequacy of the quality assurance program.

(7) A description of the program for control and monitoring of radioactive effluents and occupational radiation exposures to maintain such effluents and exposures in accordance with the requirements of Part 20 of this chapter.

(8) A description of the controls that the applicant will apply to restrict access and to regulate land use at the geologic repository operations area and adjacent areas.

(9) Plans for coping with radiological emergencies at any time prior to completion of decommissioning the geologic repository operations area.

(10) A description of the nuclear material control and accounting program.

(11) A description of design considerations that are intended to facilitate decommissioning of the facility.

(12) A description of plans for retrieval and alternate storage of the radioactive wastes should the geologic repository prove to be unsuitable for disposal of radioactive wastes.

(13) An identification of the natural resources at the site, the exploitation of which could affect the ability of the site to isolate radioactive wastes.

~~(13)~~(14) An identification of those structures, systems, and components of the geologic repository, both surface and subsurface, which require research and development to confirm the adequacy of design. For systems, structures, and components important to safety, the DOE shall provide a detailed description of the programs designed to resolve safety questions, including a schedule indicating when these questions will be resolved.

~~[(14)]~~(15) The following information concerning activities at the geologic repository operations area:

(i) The organizational structure of the [Department] DOE, offsite and onsite, including a description of any delegations of authority and assignments of responsibilities, whether in the form of regulations, administrative directives, contract provisions, or otherwise.

(ii) ~~[Managerial-and-administrative-controls]~~ The quality assurance program to be used to ensure safety.

(iii) Identification of key positions which are assigned responsibility for safety at and operation of the geologic repository operations area.

(iv) Personnel qualifications and training requirements.

(v) Plans for startup activities and startup testing.

(vi) Plans for conduct of normal activities, including maintenance, surveillance, and periodic testing of structures, systems, and components of the geologic repository operations area.

(vii) Plans for decommissioning.

(viii) Plans for any uses of the geologic repository operations area for purposes other than disposal of radioactive wastes, with an analysis of the effects, if any, that such uses may have upon the operation of the structures, systems, and components important to safety.

§ 60.22 Filing and distribution of application.

(a) An application for a license to receive and possess source, special nuclear, or byproduct material in a geologic repository at a site which has been characterized, and an accompanying environmental report, and any amendments thereto, shall be filed in triplicate with the Director and shall be signed by the Secretary of Energy or his authorized representative.

(b) Each portion of such application and environmental report and any amendments shall be accompanied by 30 additional copies. Another 120 copies shall be retained by the [Department] DOE for distribution in accordance with written instructions from the Director or his designee.

(c) The [Department] DOE shall, upon notification of the appointment of an Atomic Safety and Licensing Board, update the application and environmental report, eliminating all superseded information and serve them as directed by the board. In addition, at that time the [Department] DOE shall serve one such copy on the Atomic Safety and Licensing Appeal Panel. Any subsequent amendments to the application or environmental report shall be served in the same manner.

(d) At the time of filing of an application and environmental report, and any amendments thereto, one copy shall be made available in an appropriate location near the site of the proposed geologic repository (which shall be a public document room, if one has been established) for inspection by the public and updated as amendments to the application or environmental report are made. [This] An updated copy shall be produced at any public hearing on the application for use by any parties to the proceeding.

(e) The [Department] DOE shall certify that the updated copies of the application and environmental report, as referred to in paragraphs (c) and (d), contain the current contents of such documents submitted in accordance with the requirements of this part.

§ 60.23 Elimination of repetition.

In its application, environmental report, or site characterization report, the [Department] DOE may incorporate by reference information contained in previous applications, statements, or reports filed with

the Commission: PROVIDED, that such references are clear and specific and that copies of the information so incorporated are available in [each] the public document room located near the site of the proposed geologic repository.

§ 60.24 Updating of application and environmental report.

(a) The application and environmental report shall be as complete as possible in the light of information that is reasonably available at the time of [submission] docketing.

(b) The [Department] DOE shall update its application in a timely manner so as to permit the Commission to review, prior to issuance of a license:

(1) Additional geologic, geophysical, geochemical, hydrologic, meteorologic and other data obtained during construction.

(2) Conformance of construction of structures, systems, and components with the design.

(3) Results of research programs carried out to confirm the adequacy of designs.

(4) Other information bearing on the Commission's issuance of a license that was not available at the time a construction authorization was issued.

(c) The [Department] DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of a license, the environmental impacts of any substantial changes in the activities proposed to be carried out or any significant new information regarding the environmental impacts of activities previously proposed.

## Construction Authorization

## § 60.31 Construction authorization.

Upon review and consideration of an application and environmental report submitted under this part, the Commission may authorize construction if it determines:

(a) Safety: That there is reasonable assurance that the types and amounts of [~~wastes~~]radioactive materials described in the application can be received, possessed, and disposed of in a repository of the design proposed without unreasonable risk to the health and safety of the public. In arriving at this determination, the Commission shall consider whether:

(1) The [~~Department~~] DOE has described the proposed geologic repository including but not limited to (i) the geologic, geophysical, geochemical and hydrologic characteristics of the site; (ii) the kinds and quantities of radioactive waste to be received, possessed, stored, and disposed of in the geologic repository; (iii) the principal architectural and engineering criteria for the design of the geologic repository operations area; (iv) construction procedures which may affect the capability of the geologic repository to serve its intended function; and (v) features or components incorporated in the design for the protection of the health and safety of the public.

(2) The site and design comply with the criteria contained in Subparts E and F of this part.

(3) The [~~Department's-~~] DOE's quality assurance program complies with the requirements of Subpart G of this part.

(4) The [~~Department's-~~] DOE's personnel training program complies with the criteria contained in Subpart H of this part.

(5) The [Department's] DOE's emergency plan complies with the criteria contained in Subpart I of this part.

(6) The [Department's] DOE's proposed operating procedures to protect health and to minimize danger to life or property are adequate.

(b) Common defense and security: That there is reasonable assurance that the activities proposed in the application will not be inimical to the common defense and security.

(c) Environmental: That, after weighing the environmental, economic, technical and other benefits against environmental costs and considering [reasonable] available alternatives, the action called for is issuance of the construction authorization[-], with any appropriate conditions to protect environmental values.

§ 60.32 Conditions of construction authorization.

(a) A construction authorization shall include such conditions as the Commission finds to be necessary to protect the health and safety of the public, the common defense and security, or environmental values.

(b) The Commission [~~may, at its discretion,~~] will incorporate in the construction authorization provisions requiring the [Department] DOE to furnish periodic or special reports regarding: (1) progress of construction, (2) any site data obtained during construction which are not within the predicted limits upon which the facility design was based, (3) any deficiencies in design and construction which, if uncorrected, could adversely affect safety at any future time, and (4) results of research and development programs being conducted to resolve safety questions.

(c) A construction authorization shall be subject to the limitation that a license to receive and possess source, special nuclear, or

byproduct material at the geologic repository operations area shall not be issued by the Commission until (1) the [Department] DOE has updated its application as specified in §60.24, and (2) the Commission has made the findings stated in §60.41.

§60.33 Amendment of construction authorization.

(a) An application for amendment of a construction authorization shall be filed with the Commission fully describing any changes desired and following as far as applicable the format prescribed [~~for construction authorization applications~~], in §60.21.

(b) In determining whether an amendment of a construction authorization will be approved, the Commission will be guided by the considerations which govern the issuance of the initial construction authorization, to the extent applicable.

#### License Issuance and Amendment

§60.41 Standards for issuance of a license.

A license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area may be issued by the Commission upon finding that:

(a) Construction of the geologic repository operations area has been substantially completed in conformity with the application as amended, the provisions of the Atomic Energy Act, and the rules and regulations of the Commission. Construction may be deemed to be substantially complete for the purposes of this paragraph if the construction of (1) surface and interconnecting structures, systems, and components, and (2)



any underground storage space required for initial operation are substantially complete.

(b) The activities to be conducted at the geologic repository operations area will be in conformity with the application as amended, the provisions of the Atomic Energy Act and the Energy Reorganization Act, and the rules and regulations of the Commission.

(c) The issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public.

(d) All applicable requirements of Part 51 have been satisfied.

§60.42 Conditions of license.

(a) A license issued pursuant to this part shall include such conditions, including license specifications, as the Commission finds to be necessary to protect the health and safety of the public, the common defense and security, and environmental values.

(b) Whether stated therein or not, the following shall be deemed conditions in every license issued:

(1) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided by the Atomic Energy Act and the Commission's regulations.

(2) The [Department] DOE shall at any time while the license is in effect, upon written request of the Commission, submit written statements to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(3) The license shall be subject to the provisions of the Atomic Energy Act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall

be subject to amendment, revision, or modification, by reason of amendments to or by reason of rules, regulations, and orders issued in accordance with the terms of the Atomic Energy Act.

(c) Each license shall be deemed to contain the provisions set forth in Section 183 b-d, inclusive, of the Atomic Energy Act, whether or not these provisions are expressly set forth in the license.

§60.43 License specifications.

(a) A license issued under this part shall include license conditions derived from the analyses and evaluations included in the application, including amendments made before a license is issued, together with such additional conditions as the Commission finds appropriate.

(b) License conditions shall include items in the following categories:

(1) Restrictions as to the physical and chemical form and radioisotopic content of radioactive waste.

(2) Restrictions as to size, shape, and materials and methods of construction of radioactive waste packaging.

~~[(3)--Restrictions-as-to-the-location;-size;-configuration;-construction-and-physical-characteristics-(e.g.:-physical;-chemical-and-thermal-properties)-of-the-storage-medium:]~~

~~[(4)]~~(3) Restrictions as to the amount of waste permitted per unit volume of storage space considering the physical characteristics of both the waste and the storage medium.

~~[(5)]~~(4) Requirements relating to test, calibration, or inspection to assure that the foregoing restrictions are observed.

~~[(6)]~~(5) Controls to be applied to restrict access and to avoid disturbance to the geologic repository operations area and adjacent areas.

~~[(7)]~~(6) Administrative controls, which are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure that activities at the facility are conducted in a safe manner and in conformity with the other license specifications.

§60.44 Changes, tests, and experiments.

(a)(1) Following authorization to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area, the DOE may (i) make changes in the geologic repository operations area as described in the application, (ii) make changes in the procedures as described in the application, and (iii) conduct tests or experiments not described in the application, without prior Commission approval, provided the change, test, or experiment involves neither a change in the license conditions incorporated in the license nor an unreviewed safety question.

(2) A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question if (i) the likelihood of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the application is increased, (ii) the possibility of an accident or malfunction of a different type than any previously evaluated in the application is created, or (iii) the margin of safety as defined in the basis for any license condition is reduced.

(b) The ~~[Department]~~ DOE shall maintain records of changes in the geologic repository operations area and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the geologic repository operations area or procedures as described in the application. Records of tests and experiments carried out pursuant to paragraph (a) of this section shall also be maintained.

These records shall include a written safety evaluation which provides the basis for the determination that the change, test, or experiment does not involve an unreviewed safety question. The [Department] DOE shall prepare annually or at such shorter intervals as may be specified in the license, a report containing a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each. The [Department] DOE shall furnish the report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Any report submitted pursuant to this paragraph shall be made a part of the public record of the licensing proceedings.

§60.45 Amendment of license.

(a) An application for amendment of a license may be filed with the Commission fully describing the changes desired and following as far as applicable the format prescribed for license applications.

(b) In determining whether an amendment of a license will be approved, the Commission will be guided by the considerations that govern the issuance of the initial license, to the extent applicable.

§60.46 Particular activities requiring license amendment.

(a) Unless expressly authorized in the license, an amendment of the license shall be required with respect to any of the following activities:

(1) Any action which would make emplaced high-level radioactive waste irretrievable or which would substantially increase the difficulty of retrieving such emplaced waste.

(2) Dismantling of structures.

(3) Removal or reduction of controls applied to restrict access to or to avoid disturbance of the geologic repository operations area or adjacent areas.

(4) Destruction or disposal of records required to be maintained under the provisions of this part.

(5) Any substantial change to the design or operating procedures from that specified in the license.

(6) Decommissioning.

(b) An application for such an amendment shall be filed, and shall be reviewed, in accordance with the provisions of §60.45.

#### Decommissioning

§60.51 License amendment to decommission.

(a) The [Department] DOE shall submit an application to amend the license prior to decommissioning. The application shall consist of an update of the license application and environmental report submitted under §§60.21 and 60.22 including:

(1) A description of the program for post-decommissioning monitoring of the geologic repository.

(2) A detailed description of the measures to be employed--such as land use controls, construction of monuments, and preservation of records--to regulate or prevent activities that could impair the long-term isolation of emplaced waste within the geologic repository and to assure that relevant information will be preserved for the use of future generations.

(3) Geologic, geophysical, geochemical, hydrologic, and other site data that are obtained during the operational period pertinent to the long-term isolation of emplaced radioactive wastes.

(4) The results of test, experiments, and any other analyses relating to backfill of excavated areas, shaft sealing, waste interaction with emplacement media, and any other tests, experiments, or analysis pertinent to the long-term isolation of emplaced wastes within the geologic repository.

(5) Any substantial revision of plans for decommissioning.

(6) Other information bearing upon decommissioning that was not available at the time a license was issued.

(b) The [Department] DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of an amendment, substantial changes in the decommissioning activities proposed to be carried out or significant new information regarding the environmental impacts of such decommissioning.

#### §60.52 Termination of license.

(a) Following decommissioning, the [Department] DOE may apply for an amendment to terminate the license.

(b) Such application shall be filed, and will be reviewed, in accordance with the provisions of §60.45 and this section.

(c) A license shall be terminated only when the Commission finds with respect to the geologic repository:

(1) That the final disposition of radioactive wastes has been made in conformance with the [Department's] DOE's plan, as amended and approved as part of the license.

(2) That the final state of the geologic repository operations area site conforms to the [Department's] DOE's decommissioning plans, as amended and approved as part of the license.

(3) That the termination of the license is authorized by law, including Sections 57, 62, and 81 of the Atomic Energy Act, as amended.

Subpart C - Participation by State Governments and  
Indian Tribes

§60.61 Site review.

(a) Upon publication in the FEDERAL REGISTER of a notice that the [Department] DOE has selected a site for site characterization, in accordance with §60.11(b), and upon the request of a State, the Director shall make available NRC staff to consult with representatives of State, Indian tribal and local governments to keep them informed of the Director's view on the progress of site characterization and to notify them of any subsequent meetings or further consultations with the [Department] DOE.

(b) Requests for consultation shall be made in writing to the Director.

(c) The Director also shall respond to written questions or comments from the State, Indian tribal and local governments as appropriate, on the information submitted by the [Department] DOE in accordance with §60.11 of this part. Copies of such questions or comments and their responses shall be made available in the Public Document Room and shall be transmitted to the [Department] DOE.

§60.62 Filing of proposals for State participation.

(a) Consultation under §60.61 may include, among other things, a review of applicable NRC regulations, licensing procedures, potential schedules, and the type and scope of State activities in the license review permitted by law. In addition, staff shall be made available to cooperate with the State in developing proposals for participation by the State.

(b) States potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may submit to the Director a proposal for State participation in the review of the site characterization report and/or license application. A State's proposal to participate may be submitted at any time prior to docketing of an application or up to 120 days thereafter.

(c) Proposals for participation in the review shall be signed by the Governor of the State submitting the proposal and shall at a minimum contain the following information:

(1) A general description of how the State wishes to participate in the review, specifically identifying those issues which it wishes to review.

(2) A description of material and information which the State plans to submit to the NRC staff for consideration in the review. A tentative schedule referencing steps in the review and calendar dates for planned submittals should be included.

(3) A description including funding estimates of any work that the State proposes to perform for the Commission, under contract, in support of the review.

(4) A description of State plans to facilitate local government and citizen participation.



(5) A preliminary estimate of the types and extent of impacts which the State expects should a geologic repository be located at the site in question.

(d) If the State desires educational or information services (seminars, public meetings) or other actions on the part of NRC, such as establishing additional public document rooms or employment or exchange of State personnel under the Intergovernmental Personnel Act, these shall be included with the proposal.

§60.63 Approval of proposals.

(a) The Director shall arrange for a meeting between the representatives of the State and the NRC staff to discuss any proposal submitted under §60.62(b), with a view to identifying any modifications that may contribute to the effective participation by the State.

(b) Subject to the availability of funds, the Director shall approve all or any part of a proposal, as it may be modified through the meeting described above, if he determines that:

(1) The proposed activities are suitable in light of the type and magnitude of impacts which the State may bear, and

(2) The proposed activities (i) will enhance communications between NRC and the State, (ii) will contribute productively to the license review, and (iii) are authorized by law.

(c) The decision of the Director shall be transmitted in writing to the Governor of the originating State. A copy of the decision shall be made available at the Public Document Room. If all or any part of a proposal is rejected, the decision shall state the reason for the rejection.

(d) A copy of all proposals received shall be made available at the Public Document Room.

§60.64 Participation by Indian tribes.

(a) Any Indian tribe which is potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may:

(1) Request consultation, as provided with respect to States under §60.61.

(2) Submit proposals for participation, as provided with respect to States under §60.62, except that such proposals shall be signed by the chief executive (or other specifically authorized representative) of the Tribal organization.

(b) The Director shall respond to such requests or proposal in the manner provided in this subpart, except that decisions under §60.63 shall be transmitted in writing to the chief executive (or other specifically authorized representative) of the Tribal organization.

(c) Any request or proposal under this section shall be accompanied by such documentation as may be needed to determine the eligibility of the Indian tribe or the specific authority of its representatives.

§60.65 Coordination.

The Director may take into account the desirability of avoiding duplication of effort in taking action on multiple proposals submitted pursuant to the provisions of this Subpart to the extent this can be accomplished without substantial prejudice to the parties concerned.

## Subpart D - Records, Reports, Tests, and Inspections

## §60.71 Records and reports.

(a) The [Department] DOE shall maintain such records and make such reports in connection with the licensed activity as may be required by the conditions of the license or by rules, regulations, and orders of the Commission as authorized by the Atomic Energy Act and the Energy Reorganization Act.

(b) Records of the receipt, handling, and disposition of radioactive waste at a geologic repository operations area shall contain sufficient information to assure [~~traceability-~~] a complete history of the movement of the waste from the shipper through all phases of storage and disposal.

(c) The [Department] DOE shall promptly notify the Commission of each deficiency found in the site characteristics, and design and construction of the geologic repository which, were it to remain uncorrected, could (1) be a substantial safety hazard, (2) represent a significant deviation from the design criteria and design bases stated in the application, or (3) represent a significant deviation from the conditions stated in the terms of a construction authorization or the license, including license specifications. The notification shall be in the form of a written report, copies of which shall be sent to the Director and to the appropriate Nuclear Regulatory Commission Inspection and Enforcement Regional Office listed in Appendix [~~A-to-Part-73~~] D of Part 20 of this chapter.

## §60.72 Tests.

The [Department] DOE shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or are necessary

for the administration of the regulations in this part. These may include tests of (a) radioactive waste, (b) the geologic repository including its structures, systems, and components, (c) radiation detection and monitoring instruments, and (d) other equipment and devices used in connection with the receipt, handling, or storage of radioactive waste.

§60.73 Inspections.

(a) The [Department] DOE shall allow the Commission to inspect the premises of the geologic repository operations area and adjacent areas to which the [Department] DOE has rights of access.

(b) The [Department] DOE shall make available to the Commission for inspection, upon reasonable notice, records kept by the [Department] DOE pertaining to activities under this part.

(c)(1) The DOE shall upon request by the Director, Office of Inspection and Enforcement, provide rent-free office space for the exclusive use of the Commission inspection personnel. Heat, air conditioning, light, electrical outlets and janitorial services shall be furnished by DOE. The office shall be convenient to and have full access to the facility and shall provide the inspector both visual and acoustic privacy.

(2) The space provided shall be adequate to accommodate a full-time inspector, a part-time secretary and transient NRC personnel and will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other on site space is suggested as a guide. For sites containing multiple facilities, additional space may be requested to accommodate additional full-time inspector(s). The office space that is provided shall be subject to the approval of the Director, Office of Inspection and Enforcement.

All furniture, supplies and communication equipment will be furnished by the Commission.

(3) DOE shall afford any NRC resident inspector assigned to that site, or other NRC inspectors identified by the Regional Director as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control measures for security, radiological protection and personal safety.

PART 70 - DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

[23:]25. 10 CFR 70.14 is amended by adding a subsection (c).

§70.14 Specific exemptions.

\* \* \* \* \*

(c) The [Department] DOE is exempt from the requirements of the regulations in this part to the extent that its activities are subject to the requirements of Part 60 of the chapter.

(Amendments to all parts issued pursuant to citations of authority presently codified or, in the case of 10 CFR Part 60, as proposed to be codified.)

Dated at Washington, D.C. this \_\_\_\_\_ day of \_\_\_\_\_, 1980.

For the U.S. Nuclear Regulatory Commission.

\_\_\_\_\_  
Samuel J. Chilk  
Secretary of the Commission

ENCLOSURE "B"

STAFF ANALYSIS OF PUBLIC COMMENTS  
ON THE PROPOSED 10 CFR PART 60 RULE--  
"DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN GEOLOGIC  
REPOSITORIES - PROPOSED LICENSING PROCEDURES"  
AND  
CONFORMING AMENDMENTS TO  
10 CFR PARTS 2, 19, 20, 21, 30, 40, 51, AND 70

Colleen Ostrowski  
Office of Standards Development

Enclosure "B"

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<u>PDR No.</u>	<u>AUTHOR</u>
1	Charles Fairhurst (University of Minnesota)
2	Lowenstein, Newman, Reis, Axelrad and Toll
3	Environmental Policy Institute
4	Southwest Research and Information Center
5	Westinghouse Electric Corporation
6	League of Women Voters of the United States
7	Council of Energy Resource Tribes
8	James G. McCray (University of Arizona)
9	Sierra Club

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- 14 Shaw, Pittman, Potts and Trowbridge
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- 16 Exxon Nuclear Company, Inc.
- 17 Arthur T. Heubner (State of Connecticut, Department of Environmental Protection)
- 18 U.S. Geological Survey
- 19 Neville G. H. Cook (University of California, Berkeley)
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- 21 Natural Resources Defense Council Inc. (duplicate of #12)
- 22 Natural Resources Defense Council Inc. (duplicate of #12)
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- 31 Department of Administration, State of Wisconsin
- 32 Department of Administration, State of Wisconsin
- 33 Americans for Indian Opportunity
- 34 Sheldon Meyers (U.S. Department of Energy)

## INTRODUCTION

A proposed rule, 10 CFR Part 60 "Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedures," and conforming amendments to 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, and 70 were published for comment in the Federal Register on December 6, 1979 (44 FR 70408). In response to this request for comments, the NRC received 34 letters presenting the views of individuals (4), Indian Tribes (2), Congressional and State officials (7), law firms (2), utilities (2), government agencies (5), and other interested organizations (12).

All comments were considered with respect to revising and improving the text of the final rule. This document presents the staff's analyses of these comments. Chapter 1 contains a discussion of the comments received on the major issues of the proposed rule, while Chapter 2 contains discussions of specific revisions of the text proposed by the individual commenters.

In some instances, similar comments were grouped together and discussed singly to minimize repetition. The comments and staff responses are arranged according to subject matter in Chapter 1 and according to applicable sections of the proposed rule in Chapter 2. The source of each comment is identified by author and PDR number.

Appendix A provides "Comparative Texts of the Proposed and Final Rule;" Appendix B contains copies of the individual letters received.

## CHAPTER 1

### MAJOR ISSUES OF 10 CFR 60 AND CONFORMING AMENDMENTS ADDRESSED IN COMMENTS

#### I. GENERAL COMMENTS ON THE PROPOSED PROCEDURAL RULE

The comments received on 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70 were primarily focused on 10 CFR Part 60--"Disposal of High-Level Radioactive Wastes in Geologic Repositories." Most commenters viewed the proposed 10 CFR Part 60 as a significant improvement over the 1978 General Statement of Policy and supported the Commission decision to withdraw the General Statement of Policy. The majority of the commenters endorsed the principles and procedures outlined in the proposed rule. The need and timeliness of a proposed rule specifically tailored to geologic disposal of high-level radioactive waste (HLW) was generally recognized by the commenters. Several commenters applauded the NRC approach to licensing the geologic disposal of HLW as conservative, logical, and systematic. Other commenters supported the step-by-step licensing process outlined in 10 CFR Part 60. The elimination of the "provisional construction authorization" from the proposed rule was commended by several commenters.

In addition to general support of the proposed rule, reservations were expressed by some commenters. The major reservations with the proposed rule usually fell into one of the following three categories: (1) the NRC was regarded as being

passive on certain key issues inherent to 10 CFR Part 60; (2) several aspects of the regulations were considered too vague and not stringent enough; and (3) the NRC was viewed as overstepping its authority at the expense of the authority of other government agencies involved in the problem of HLW disposal in a geologic repository. Some commenters wished to see the technical criteria that will be used in licensing--the proposed rule addressed only the procedural requirements. Technical criteria have been addressed in an Advance Notice of Proposed Rulemaking (ANPR) published in the May 13, 1980 issue of the Federal Register (45 FR 31393). Included with the ANPR were draft technical criteria. The NRC staff is continuing to develop the technical criteria. The following 17 comments provide a sampling of the general remarks that addressed 10 CFR Part 60.

Comment No. 1: Environmental Policy Institute (3)

The Environmental Policy Institute endorses, in principle, the licensing procedures outlined in the proposed rule. These new procedures address many of the problems we found with the November 1978 General Statement of Policy regarding early site activities. Specifically, the Institute endorses the concept, and substance, of the "site characterization" requirement contained in Section 60.11 of the proposed rule. We also agree with the proposed series of licensing steps: a construction authorization (Sec. 60.31), a repository license (Sec. 60.41), a decommissioning amendment (Sec. 60.51), and a license termination review (Sec. 60.52).

The proposed rule is deficient, however, in several key respects and continues to reflect the overly passive approach of the Commission in dealing with the Department of Energy program which we criticized in the 1978 General Statement of Policy.

Staff Response to Comment No. 1:

The "deficiencies" perceived by the commenter are discussed in connection with the specific comments.

Comment No. 2: U.S. Geological Survey (18)

In general, the USGS endorses the procedures set forth in the proposed rule. They have been formulated to take account of the fact that disposal of radioactive waste in mined repositories requires new technology that must be developed in a stepwise, conservative manner. Each major step in the licensing provides opportunities for reevaluation of previous analyses and judgments; State and local officials and the general public will be involved in these reevaluations.

Staff Response to Comment No. 2:

No staff response required.

Comment No. 3: Energy Resource Conservation and Development Commission (10)

The proposed licensing procedures for disposal of high-level radioactive waste in geologic repositories (Federal Register, December 6, 1979) are a significant improvement over the proposed general statement of policy which the U.S. Nuclear Regulatory Commission (NRC) issued in November 1978. The current proposal demonstrates this improvement in two ways. First, the Supplementary Information indicates NRC's recognition that an understanding of the fundamental scientific questions associated with long-term geologic isolation from the biosphere of nuclear wastes is the key to a successful licensing program. Second, it provides a framework within which the necessary information may be gathered as a basis for determining whether a specific repository design at a specific site will provide "reasonable assurance" that radioactive wastes can be disposed of without "unreasonable risk to the health and safety of the public."

Comment No. 4: Environmental Protection Agency (26)

The U.S. Environmental Protection Agency (EPA) has reviewed the proposed rule 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70, "Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedure," which appears in Vol. 44, Federal Register, pages 70408-70421. While the proposed rule appears to offer a logical, systematic approach to licensing a high level radioactive waste (HLW) repository, we have a concern with respect to site acceptability criteria. We urge that the criteria be defined so as to avoid ambiguity and to assure proper attention and informed decisions at each critical step of the exploration and investigation.

Staff Response to Comment Nos. 3 and 4:

The NRC published an Advance Notice of Proposed Rulemaking (ANPR) in the May 13, 1980 issue of the Federal Register. Included with the ANPR were draft technical criteria which the NRC staff is continuing to develop.

Comment No. 5: Energy Resource Conservation and Development Commission (10)

We do not believe, however, that the current proposal contains all the procedural steps which our understanding of this scope implies are necessary to make licensing decisions.

Staff Response to Comment No. 5:

The additional procedural steps recommended by the commenter are discussed in connection with specific comments.

Comment No. 6: Sierra Club (9)

The Sierra Club endorses many of the principles in the Proposed Rule, many of which have been supported by the Final Report of the Interagency Review Group on Nuclear Waste Management and in President Carter's February 12, 1980 Policy Statement on Nuclear Waste Management. However, we do differ with a number of the provisions of the Proposed Rule.

Comment No. 7: Sierra Club (9)

The NRC has not demonstrated any intention to regulate the geologic disposal program with the resolve to be expected of the regulating agency.

Staff Response to Comment Nos. 6 and 7:

The "differences" identified by the commenter are discussed in connection with the specific comments.

Comment No. 8: Lowenstein, Newman, Reis, Axelrad and Toll (2)

Now that the Commission has proposed its more detailed licensing procedures, there continues to be a great deal in the Commission's approach with which we agree. Moreover, we heartily endorse the change in the Commission's approach which would eliminate the formal step of "provisional construction authorization" and permit site characterization work (including work "at depth") to be performed in advance of the filing of an application.\*

However, some of the concerns we have previously expressed persist, and some new questions have arisen in light of the detailed requirements that first appear in the proposed rule.

\*As set forth later in these comments, we do not agree that such site characterization work should be mandated at all alternative sites. (Pages 4-5, infra.) In addition, we believe that the scope of the permitted shaft work should be expanded to include such work as DOE deems necessary or desirable. (Pages 5-6, infra.)



Staff Response to Comment No. 8:

The concerns and questions referred to by the commenter, including multiple site characterization and scope of shaft work, are discussed in connection with the specific comments.

Comment No. 9: Shaw, Pittman, Potts and Trowbridge (14)

The proposed regulations supersede the proposed General Statement of Policy on Licensing Procedures for Geologic Repositories for High-Level Radioactive Wastes (43 Fed. Reg. 53869, November 17, 1978). Comments filed on January 16, 1979 by the Radioactive Waste Management Group on the proposed General Statement of Policy commended the Commission for its diligent attempt to devise procedures which would meet the goals of maximizing public confidence while at the same time proceeding in an expeditious fashion with the waste management program. We did however recommend a number of changes in the proposed General Statement. We are pleased to note that some of these changes are reflected in the proposed regulations. Other problem areas however remain and new ones have been created.

Staff Response to Comment No. 9:

The problem areas referred to by the commenter are discussed in connection with the specific comments.

Comment No. 10: Walley (Mississippi Department of Natural Resources) (15)

The present approach to the HLW Disposal process evidenced by the proposed licensing procedures outlined in FR. Vol 44, No. 236 is an action in the proper direction. The Mississippi Office of Energy supports the concept of the NRC's involvement in expanded site characterizations rather than provisional construction authorizations and in the review of the Department of Energy's plans for site characterization and site selection procedures, methods and criteria prior to the use of such procedures, methods, and criteria.

Staff Response to Comment No. 10: No response required.

Comment No. 11: Natural Resources Defense Council Inc. (12)

The Commission's proposed rule is a significant improvement over the earlier proposed general statement of policy. (43 Fed. Reg. 53869; November 17, 1978.) We applaud the overall approach incorporated in the proposed rule, and we congratulate the Commission on a job basically well done. NRDC strongly supports, in particular, the proposed step-by-step process for reviewing the Department's development of geologic repositories. This cautious approach, together with

appropriate technical conservatism that we urge be incorporated in the upcoming technical criteria, is desirable because there is no experience in constructing geologic repositories anywhere in the world, and because there are known significant scientific uncertainties and gaps in knowledge about how to design, construct, and operate geologic repositories safely.<sup>2</sup> Careful review at each initial stage in the selection of sites, construction and operation of repositories, and in the closure of repositories is necessary to protect public health and the environment adequately.

<sup>2</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A, page vi (October 1978).

Staff Response to Comment No. 11:

No staff response required to Comment No. 11.

Comment No. 12: Natural Resources Defense Council Inc. (12)

There are, however, fatal omissions in the proposed rule. In order for the stated objectives of the NRC to be fulfilled, and for the NRC to meet the Atomic Energy Act's (AEA) requirements to protect public health and safety, these serious deficiencies must be corrected in the final rule. In particular, (1) the final regulations should specify a minimum number of sites that must be characterized by the Department before an application to construct a repository can be docketed by the NRC; (2) all of the minimum number of sites should qualify under an early screening test to assure that they satisfy, to the extent possible prior to exploration and in situ testing at depth, NRC's technical criteria for sites;<sup>4</sup> (3) the regulations should explicitly identify the problems of conflict with natural resources, and other situations potentially leading to inadvertent human intrusion into a repository, as major issues to be discussed fully in site characterization reports and license applications; (4) the rule should explicitly state that in the event there is NRC dissatisfaction with a site characterization report, an application to construct a repository will not be docketed; and (5) DOE should be required to explore and investigate these multiple sites at depth.

<sup>4</sup>The determination, based on information prior to exploration and in situ testing at depth, that sites are "qualified" should be made only after there has been a public hearing on the issue.

Staff Response to Comment No. 12:

The NRC consider site characterization at three sites representing a minimum of two geologic media to be the minimum needed to satisfy NEPA. The sites selected by DOE should all represent realistic alternative sites; therefore, the staff sees no need for introducing qualifications to the program of site

characterization. Obviously unsuitable potential sites should be detected during the site exploration program and would not be characterized.

The staff believes that in situ testing at depth is an essential technique which the level of information needed to make a meaningful evaluation of the alternative sites can be obtained. However, the rule does not categorically require in situ testing at depth as a part of site characterization because it may be possible for DOE to develop the needed information on a site by other methods.

See also the response to Comment No. 34, which indicates that it is NEPA and not the Atomic Energy Act, that mandates the consideration of alternatives to the DOE preferred site.

The current staff opinion on the problems of conflicts with natural resources and possible inadvertent human intrusion into a repository may be found in the technical criteria included in an Advance Notice of Proposed Rulemaking published in the May 13, 1980 issue of the Federal Register.

The NRC will not approve or disapprove a Site Characterization Report. The NRC will only approve or deny a license application. An applicant is entitled to have a license application reviewed on its merits. NRC staff dissatisfaction would not be a legally sufficient basis for refusal to docket.

Comment No. 13: Natural Resources Defense Council Inc. (12)

Additionally, the discussion of the environmental impacts associated with site characterization preceding the proposed rule should be substantially improved, and the final regulations should improve the provisions for state participation in the NRC review process, particularly by "interested" states. Finally, we are concerned that the NRC has omitted discussion and formulation of policy on (1) the implementation of the National Environmental Policy Act (NEPA), as it applies to NRC's activities in licensing geologic repositories, and (2) provision of financial and other assistance to public interest groups that, with the availability of adequate resources, could meaningfully contribute to the NRC's review of DOE plans. We urge the NRC to direct attention to these two important matters at the earliest possible time, because adequate policies on them are essential to a sound licensing approach.

Staff Response to Comment No. 13:

The "omissions" identified by the commenter are discussed in connection with the specific comments.

Comment No. 14: Atomic Industrial Forum (25)

Our major concern with the proposed rule is the implication that NRC must await DOE's completion of extensive site characterization programs for several sites in several media before it can establish licensing criteria. We are aware of the obligation imposed on DOE by the President's policy statement of February 12 to "focus on research and development, and on locating and characterizing a number of potential repository sites in a variety of different geologic environments with diverse rock types." That policy statement further states: "When four to five sites have been evaluated and found potentially suitable, one or more will be selected for further development as a licensed full-scale repository."

Staff Response to Comment No. 14:

The Atomic Industrial Forum is incorrect in its interpretation that the proposed rule implies "that NRC must await DOE's completion of extensive site characterization programs for several sites in several media before it can establish licensing criteria."

The proposed rule requires multiple site characterization in the pre-application stages in order to provide a basis for evaluating alternatives in accordance with NEPA. The staff believes that multiple site characterization provides

the only realistic means to assure that the preferred sites that can be compared with credible, as opposed to speculative alternatives. Technical criteria are under development by the staff and an Advance Notice of Proposed Rulemaking on "Technical Criteria for Regulating Geologic Disposal of High-Level Radioactive Waste" was published in the May 13, 1980 issue of the Federal Register (45 FR 31393).

Comment No. 15: U.S. Department of Energy (11)

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.

Staff Response to Comment No. 15:

The issues identified by the commenter are discussed in connection with the specific comments.

Comment No. 16: The Analytic Science Corporation (28)

Our greatest concern with the proposed rules is the potential for lack of consistency between information presented and decisions made in the early stages (i.e., site selection) of the proposed licensing process. The key issue can be expressed as follows: in the site selection stages of the licensing process, will the scope and detail of data, and the amount and type of data analysis presented, be consistent with what the NRC really requires to make their decisions? Put another way, do the proposed rules, especially with respect to the content and use of the Site Characterization (Identification) Report, adequately reflect the NRC's intent and expectations?

The issue addressed is shown diagrammatically in the attached figure, which indicates that the NRC might pursue three alternative strategies in its process of certifying the safety of a proposed repository at the early stages of review: a high, intermediate, or low degree of confidence that the repository will indeed prove to be acceptable (curves 1, 2, and 3, respectively). The thrust of the discussion of Site Characterization Review (44 F.R. 70409) is clearly to favor a conservative approach, i.e., to have an early-on high degree of confidence such as is illustrated by curve 1.

We endorse this conservative approach. We do not, however, find clear evidence that the relationships among this approach, expenditures, data acquisition, data analysis, and review criteria are understood. In our estimation, the investments of funds and effort needed to prepare the Site Characterization (Identification) Report are very large. In this context, the incremental site characterization costs may indeed be small (44 F.R. 70410), but so are the incremental gains in knowledge. What, then, are the objectives and benefits for characterization excavations and in-situ testing? More is said later about this issue.

Staff Response to Comment No. 16:

The staff disagrees with the suggestion that site characterization will result in small incremental gains in knowledge. This topic was discussed (44 FR 70410) in the statement of considerations accompanying the proposed rule.

Comment 17: State of Wisconsin, Department of Administration (31)

The Committee is in full agreement with the stated rationale for this NRC rulemaking proceeding, namely that "the considerable differences between a geologic repository and other licensed facilities, particularly in view of the

significance of a repository with respect to the health and safety of future generations, make it desirable to develop rules tailored specifically to geologic disposal of HLW." (44 FR 70408)

The Committee supports the Commission's decision to withdraw the proposed General Statement of Policy published in November 1978, and endorses the three areas in which the proposed rule departs from that earlier Statement. Specifically, we support the Commission's requirement for review of site characterization plans and site selection criteria in advance of actual site characterization activities [10 CFR 60.11(a)]; the stipulation that site characterization plans must consider a minimum of three sites representing a minimum of two geologic media [10 CFR 51.40(d)]; and the expansion of the definition of site characterization to include exploration and in site testing of the proposed host media [10 CFR 60.2(n)].

Staff Response to Comment No. 17:

No response required.

II. COMMENTS ON INTERAGENCY INTERACTIONS IN THE PROGRAM OF HIGH LEVEL WASTE DISPOSAL IN GEOLOGIC REPOSITORIES

Nine specific comments, plus numerous others addressing whether or not the Department of Energy should be required to conduct multiple site characterization and in situ testing by the NRC, indicate the need to state clearly the authority of the Department of Energy (DOE), the Nuclear Regulatory Commission (NRC), the Environmental Protection Agency (EPA), and the Bureau of Land Management (BLM) of the Department of the Interior.

The Federal government has the primary responsibility for the permanent disposal of high-level radioactive wastes--not the nuclear industries. At present, three Federal agencies--the DOE, NRC, and EPA--are involved in developing permanent disposal programs for high-level radioactive waste. It is anticipated that the Bureau of Land Management (BLM) of the Department of

the Interior may become involved when actual sites are selected as potential repository sites.

The DOE is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository. The DOE must investigate alternative potential repository sites and finally select a preferred repository site. The DOE must then submit to the NRC an application for licensing the repository.

The NRC, under Sections 202 (3) and (4) of the Energy Reorganization Act of 1974, as amended, is developing regulations and guidance that define the licensing requirements for the facilities used for the receipt and storage of high-level radioactive wastes. The NRC must also assure that the EPA standard is satisfied and must protect the public health and safety.

The EPA is responsible for developing generally applicable environmental standards for radiation in the environment. EPA is currently developing 40 CFR Part 191, Environmental Radiation Protection Standard for Management and Disposal of Spent Nuclear Fuel, High-Level and Transuranic Radioactive Wastes.

The BLM, an agency within the Department of the Interior, is responsible for managing public land and land upon which mineral rights have been reserved by the Federal government. The BLM may become involved in the siting process if DOE proposes the withdrawal of public land for potential use as a repository.



Comment No. 18 : Peter J. Walley, Mississippi Department of Natural Resources (15)

It is most important at the state and local level that agency representatives and citizens in general have a clear understanding of the roles to be played by DOE, NRC, EPA, and other federal agencies that might be involved. The process now defined tends to cloud and distort the view as to these roles.

Some overview of these relationships should be made an ongoing part of any State and local public hearing and/or meetings.

Staff Response to Comment No. 18:

The staff agrees with Mr. Walley's comment. However, it does not appear to require any change in the proposed rule.

Comment No. 19: U.S. Department of Energy (11)

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 alternatives 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.

Staff Response to Comment No. 19:

DOE's responsibility to select sites for characterization is clearly stated in §60.11. DOE clearly has authority to propose particular sites for licensing under §60.21. NRC nevertheless has an obligation to evaluate DOE's selections insofar as may be necessary for the Commission to make findings under NEPA.

Comment No. 20: Westinghouse Electric Company (5)

Also, need for the proposed extensive involvement of NRC during the site characterization process is far from clear. Since NRC will issue no license or authorization at this point in the process, or be in any way bound as a result of such review, it is difficult to see how this accomplishes any useful objective.

Staff Response to Comment No. 20:

Westinghouse Electric Company is correct in noting that the NRC will issue no license or authorization during site characterization. The provision for early

review of the DOE site characterization plans will provide the Director of NMSS an opportunity to point out those aspects of the location which, in the judgment of the staff, require special attention and to indicate particular items of information that will need to be provided to the Commission with the license application so that licensing decisions with respect to the site being considered can be made. See the full discussion of this topic at 44 FR 70409.

Comment No. 21: James McCray (8)

The NRC should not be involved in the screening of sites for site characterization.

Staff Response to Comment No. 21:

The NRC will not be involved in screening sites for site characterization. §60.11 makes it clear that this selection will be made by DOE. The NRC will review the Site Characterization Report for the site that DOE has selected for site characterization. The DOE will decide which sites to include in its site characterization program. NRC is interested in DOE's site screening and selection process because it must assure, before authorizing construction, that alternatives have been considered in accordance with NEPA.

Comment No. 22: Lowenstein, Newman, Reis, Axelrad and Toll (2)

For reasons that were set forth at some length in the UWMG's January 16, 1979, comments we urged that programmatic decisions reached by DOE in accordance with NEPA should not be subject to unnecessary duplicative review in a subsequent licensing proceeding.\* For example, we recommended that the Commission's policy should assure that its licensing proceedings not reexamine DOE's programmatic decisions on the objectives, structure, and timing of the overall DOE program for the management of solidified high level wastes or spent fuel.

\*Our comments set forth the detailed legal basis for avoidance of duplicative reconsideration of programmatic decisions citing, inter alia, Scientists Institute for Public Information vs. AEC, 481 F.2d 1079 (D.C. Cir. 1973); Energy Research and Development Administration, et al., (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 73 (1976), and the then recently adopted CEQ regulations (40 CFR §§1502.4, 1502.20). To avoid repetition of that discussion, we simply incorporate it by reference.

The Commission appears to defer acting on the UWMG's recommendation by stating that the proposed rule does not explicitly address the NEPA responsibilities of the Commission regarding matters within the scope of DOE's generic environmental impact statement on the management of commercially generated wastes (the "GEIS"). 44 F.R. 70408. The Commission indicates that the possibility of adopting DOE's GEIS may be considered at an appropriate time. Id.

We do not quarrel with the notion that the Commission can defer some aspects of consideration of the impact of the GEIS on the Commission's program until the final GEIS is issued.\*\* But, in our view, the Commission's proposed rule fails to reflect appropriate consideration of the deference that should be given to DOE's programmatic decisions -- regardless of the precise decisions reached by DOE on the basis of the GEIS. Specifically, we believe that the Commission should not dictate either in the proposed rule or in the accompanying statement of considerations the number of alternative sites or media that DOE should explore. As the Commission is well aware, in his Message to Congress of February 12, 1980, the President, pending final decisions under NEPA, adopted an interim planning strategy under which DOE will investigate a number of potential repository sites in a variety of different geologic environments with diverse rock types. When four to five sites have been evaluated, one or more will be selected for further development as a licensed full-scale repository. Following completion of the GEIS, the President will reexamine this interim strategy and decide whether any changes need to be made. DOE will also prepare by 1981 and update biannually a National Plan for Nuclear Waste Management. Both the interim strategy and any changes thereto will, of course, be subject to Congressional review processes.

\*\*DOE has indicated that the final GEIS may be issued this fall.

Staff Response to Comment No. 22:

As indicated in the comment, the question of Commission review of matters within the scope of the DOE GEIS has been deferred and will be treated separately. However, on the question of number of alternative sites or media that DOE should explore, the staff believes that NEPA requires that the Commission review a sufficient number of alternatives to satisfy the requirements of the "rule of reason." NRC cannot abdicate its responsibility in this regard by giving automatic deference to the decisions of DOE.

Comment No. 23: Shaw, Pittman, Potts and Trowbridge (14)

44 Fed. Reg. at 70408. We continue to urge that the Commission make use of the "tiering," "lead agency," or "joint lead agency" concepts codified in the

Council on Environmental Quality regulations to assure that NRC will not unnecessarily duplicate DOE's efforts.

Multiple levels of review are already built into generic decisionmaking on waste management (i.e., DOE, Interagency Review Group, the President, Congress, the State Planning Council, and individual states). Yet another layer of review (NRC's reexamination of generic decisions in the course of NEPA process) will add little except the opportunity for delay. Questions involving the timing of repository development, regional siting, the scope and future of the commercial nuclear program, and the like ought to be excluded from NRC NEPA analyses based upon their consideration in DOE NEPA reviews. Similarly, disposal technologies other than mined geologic repositories ought not to be considered by the Commission since those alternatives are not likely to be available in the foreseeable future. 44 Fed. Reg. at 70411. The scope of NRC's NEPA responsibilities should be clearly delineated in advance. This will avoid needless arguments at later stages of the process.

Staff Response to Comment No. 23:

See response to Comment No. 22.

Comment No. 24: Exxon Nuclear Co. Inc. (16)

In general, Part 60 appears to conform to the precepts embodied in Part 50, which governs the licensing of production and utilization facilities. However, unlike Part 50, Part 60 introduces what many will view as an inappropriate burden of policy issues in addition to the concepts normally found in the CFR involving strictly procedural matters and technical criteria. In particular, we believe that it is unnecessary for the Commission to address the policy-related issue as to the number of fully characterized high-level radioactive waste sites in these proposed new regulations.

It would seem to us that the NEPA process (to which DOE must adhere) would allow a site selection process involving a candidate site which adequately meets reasonable technical site criteria previously promulgated by the regulations and was the only site which had been subjected to an extensive and detailed site characterization process. Such an approach is entirely consistent with a total systems evaluation which takes into account the beneficial role of stabilized waste forms, engineered barriers, and other engineered considerations in meeting disposal criteria.

To the extent that the Department of Energy, to prudently manage a program for which it is the designated lead agency, may elect to investigate one or more backup sites and address these alternate sites and plans for investigating them in its site characterization report should be viewed as the DOE's prerogative. Should this approach be adopted by the DOE, it would then be possible to "bank" these alternate sites for future use. But, if a site, in whatever media and in an acceptable location, can be shown with high confidence to meet the NRC's criteria, then submitting an application for a construction permit should not have to wait until other sites are fully characterized.

The proposed requirement for evaluating multiple sites may well become a requirement through other actions, such as administration policy, Congressional action, or in DOE's development of its National Plan for Nuclear Waste Management. NRC's regulations need not duplicate these requirements, they merely need to be responsive to whatever national course of action is chosen.

Staff Response to Comment No. 24:

See the response to Comment No. 22.

Comment No. 25: U.S. Department of Energy (11)

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.

Staff Response to Comment No. 25:

NRC believes that it should establish its own channels for dialogue with the public, as an aid in developing Director opinions and in keeping the public informed regarding its activities. It may be possible to coordinate NRC public meetings with those scheduled by DOE.

III. ON THE CONCEPT ISSUE OF MULTIPLE SITE CHARACTERIZATION:

A number of commenters addressed the provisions for multiple site characterization as set forth in the proposed rule. Multiple site characterization is being required in order to aid the Commission in accordance with paragraph 51.40(d) in making a comparative evaluation as a basis for arriving at a reasoned decision under NEPA. Multiple site characterization will prevent a premature commitment by either DOE to a particular site and will ensure that the preferred

site selected by DOE will be chosen from a slate of candidate sites that are among the best that can reasonably be found.

The commenters expressed opinions that straddled the Commission view on multiple site characterization. Comments related to multiple site characterization have been divided into several sections in order to better tailor NRC responses to the diversity of opinions expressed on various aspects of multiple site characterization. These comments often addressed both sides of a particular aspect of multiple site characterization and have been segregated accordingly.

#### FOUR COMMENTS ADDRESSED THE NECESSITY OF MULTIPLE SITE CHARACTERIZATION

##### Comment No. 26: Charles Fairhurst (3)

It will be necessary to essentially complete characterization of at least 3 sites before submitting a request for licensing of one of the sites as a repository. It could well arise that all the sites were found to be suitable for licensing as repositories, perhaps with varying levels of engineered barriers. In such an event it seems logical to license all suitable sites. This may be possible under the proposed regulations, but it is not clear whether, for example, 2 or more sites must be rejected for each one accepted. This would be an unnecessary restriction.

##### Staff Response to Comment No. 26:

The proposed rule does not preclude the DOE from later selecting a second repository site from the remaining candidate sites in the future. However, alternatives would have to be considered in accordance with NEPA.

##### Comment No. 27: Natural Resources Defense Council Inc. (12)

An important aspect of the proposed approach is that there be investigation of several sites prior to selection of one for development, because this procedure will reduce the chance of undue institutional momentum accruing to a site that may be inferior. We believe that it was this concern that was behind the President's recent decision to cancel the Waste Isolation Pilot Plant, for instance. Indeed, without a provision for comparative review prior to commitment to one site, the desirability of a requirement for exploration and in situ testing at depth would be significantly diminished. The proposed regulations help ensure

that the commitment of a particular investigative and design team to an individual site will not be controlling, because there will be a comparative review of several alternatives that have been studied to the same extent.

Staff Response to Comment No. 27:

See discussion of Comment No. 28.

Comment No. 28: Natural Resources Defense Council Inc. (12)

The need for characterizing several sites in a variety of rock media is justified by more than the need to consider alternatives under the provisions of NEPA, although that is sufficient justification. Specifically, we believe that there are two more compelling reasons for characterization of several sites: (1) consideration of several sites in a variety of rock types provides critical information about the relative safety of different environments; and (2) characterization of several sites avoids Departmental momentum in favor of only one site and undue institutional commitment to only one proposal. These are issues at the heart of the NRC's responsibility to protect public health and safety under the requirements of the Atomic Energy Act.

Staff Response to Comment No. 28:

We do not believe the Atomic Energy Act contemplates that NRC engage in a safety review encompassing approaches departing fundamentally from an applicant's proposal. Our task under that Act is, instead, to determine whether activities carried out as proposed would result in unreasonable risk to the health and safety of the public. However, if we did not anticipate that several sites were to be characterized, the avoidance of project momentum might call for NRC's formal involvement to commence at an earlier stage.

Comment No. 29: Energy Resources Conservation and Development Commission (10)

Site characterization is the foundation of the licensing process; it provides the data on which the licensing decision will be based. Similarly, a key feature of site characterization is the investigation of alternative sites and media.

NRC appears to agree with this review. Footnote seven on page 70411 of the Supplemental Information states that NRC expects the U.S. Department of Energy (DOE) to submit a "wider range of alternatives" than what is considered a minimum: three sites representing a minimum of two geologic media. The "significance of the decision selecting a site for a repository" is cited as justification for expecting DOE to exceed the minimum requirements.

We have two concerns about this approach. First, our interpretation of the significance of repository selection is such that two media should be investigated at a minimum of two sites per medium. Second, NRC's intent with respect to considering alternatives is not reflected in the regulations. There is no requirement for DOE to submit more than one site characterization report or to characterize more than one site. Furthermore, the Environmental Impact Statement (EIS) filed with the license application may have to be site specific to fulfill the requirements of sections 51.5 and 60.21. We suggest that the regulations specify more explicitly the requirements for site characterization and the contents of the site characterization report. Alternatively, an EIS could be required for the site characterization process. In addition, the proposed regulations do not provide for adequate consideration of either NRC's or the public's comments on site characterization reports. The regulations should specify that DOE must respond to issues raised in the site characterization report.

Staff Response to Comment No. 29:

The Commission considers site characterization at three sites representing a minimum of two geologic media to be the minimum to satisfy NEPA (paragraph 51.40 (d)).

With respect to multiple site characterization and the site characterization report, paragraph 60.11(a) states that the report shall include "(5) identification and location of alternative media and sites on which DOE intends to conduct site characterization for which DOE anticipates submitting subsequent site characterization reports."

The definition of "site characterization" appropriately describes the scope of the activity; greater detail is unwarranted in view of the need to take into account the many differences from one site to another. The staff does not consider it necessary to require DOE to respond specifically to NRC or public comments, although the staff expects DOE to do so. Obviously, any failure to deal with significant issues in DOE's submissions will result in delays or the creation of issues that must be resolved in formal proceedings.



THE FOLLOWING COMMENT DISPUTES THE NECESSITY OF MULTIPLE SITE CHARACTERIZATION

Comment No. 30: Atomic Industrial Forum (25)

We endorse the President's program and believe it has the potential for resolving public acceptance and political issues. On the other hand, NRC's responsibility in determining licenseability should be based solely on whether a particular site meets certain predetermined technical criteria. It should not be necessary for NRC to evaluate the characterization of multiple sites in multiple media to develop performance criteria. Further, such criteria should be available at an earlier date than is indicated in the President's policy statement in case the Congress, which it has within its powers to do, determines that the program should be accelerated.

A. Our general comment applies specifically to the tone of the Supplementary Information as follows:

1. Page 70409 Vol. 44 No. 236

"...We anticipate that it will be necessary for the Department to explore at depth more than one site at different locations and in different geologic media...."

2. Page 70410 Vol. 44 No. 236

"...procedure here is consistent with the recommendation of the Inter-agency Review Group on Nuclear Waste Management which calls for simultaneous investigation of several potential sites...."

3. Page 70410 Vol. 44 No. 236

"...in light of the requirement discussed above that multiple sites must be characterized...."

It appears that the writer has used the careful selection of random points to develop the basis for an NRC requirement.

Staff Response to Comment No. 30:

See discussion of Comment No. 32.

SIX COMMENTERS FAVORED THE REQUIREMENT OF SITE CHARACTERIZATION OF MULTIPLE SITES

Comment No. 31: Sierra Club (9)

The Proposed Rule should expressly require the Department of Energy to characterize fully several sites in a variety of different geologic media as a prerequisite to applying for a license under Section 60.21. The Federal Register discussion preceding the Proposed Rule stresses repeatedly the value of characterizing several potentially acceptable sites in a variety of geologic media.

Moreover, it is assumed that DOE will conduct such a program. (See "Departure from the General Statement of Policy" at 70409, "Site Characterization Review" at 70409, "Provision for Characterizing Several Sites" at 70409-10, and "Procedures" at 70411.) This requirement was also stressed in President Carter's February 12, 1980 Policy Statement. Yet neither Section 60.21 nor any other section requires multiple site characterizations prior to DOE's application for a license.

Staff Response to Comment No. 31:

See discussion of Comment No. 32.

Comment No. 32: Natural Resources Defense Council Inc. (12)

NRDC concurs that NEPA requires DOE to evaluate fully several alternative sites in a variety of geologic environments. The proposed regulations, however, inexplicably do not themselves require the Department to consider several sites in a variety of different types of rock as a matter important for protection of public health and safety. (See, 44 Fed. Reg. 70415; footnote.) We believe strongly that pursuant to its obligation under the Atomic Energy Act to protect public health and safety, the NRC should require a specific, minimum number of sites that the Department must characterize. In particular, we urge the NRC to incorporate the recent Presidential directive, based on the recommendation of a majority of the Interagency Review Group on Nuclear Waste Management, to the Department to locate at least four sites in a variety of different geologic environments before selecting the first site for a repository.<sup>6</sup> We interpret the phrase "a variety of geologic environments" in the Presidential "Fact Sheet" to mean that at least three different types of rocks have to be characterized.

<sup>6</sup>Office of the White House Press Secretary, "Fact Sheet, The President's Program on Radioactive Waste Management," p. 4 (dated February 12, 1980).

Staff Response to Comment No. 32:

The statutory basis for multiple site characterization is the National Environmental Policy Act. Under NEPA, an agency's consideration of alternatives is governed by a "rule of reason." Whether the number of alternative sites characterized is sufficient, and whether the analysis of such sites (at depth or otherwise) has been adequate, thus rests upon a concept of reasonableness. As the Commission has stated, it considers site characterization at three sites, representing a minimum of two geologic media to be the minimum needed to satisfy NEPA, but it does not believe that NEPA permits the NRC to say that characterization at three sites would always be either necessary or sufficient. Nor can we

specify, as an abstract proposition, the detail of the investigation that will be necessary for us to discharge our duty under NEPA to consider alternatives.

Comment No. 33: Environmental Policy Institute (3)

First, much is made in the Notice of the Commission's intent to require DOE to characterize several sites before construction will be authorized. Nowhere in the rule, however, is there any requirement for multiple characterizations. Such a requirement is most notably absent from Sec. 60.21 "Content of Application" which should explicitly require characterization of multiple sites and the degree to which these characterizations must be described and comparable with one another. Since this section establishes the fundamental requirements for licensing, and since the NRC intends to maintain an "informal" prelicensing relationship with DOE concerning site selection activities, it is essential that a specific multiple site requirement be included in the first "formal" stage outlined in Sec. 60.21.

Staff Response to Comment No. 33:

The requirement of multiple site characterization is presented in paragraph 51.40(d).

A license application will be submitted by DOE for the preferred site selected from among the characterized sites. Alternatives must be considered in connection with each construction authorization in accordance with 10 CFR Part 51, as amended. See, also, the responses to comments 28 and 32. Since the requirements for information on other sites derives from NEPA, such information would be contained in the applicant's environmental report and not in the safety analysis report.

Comment No. 34: Southwest Research and Information Center (23)

Before NRC can make determinations about site characterization, it must require in its rules that DOE provide detailed information about all sites examined—presumably at least 10-12 locations before 4 or more are selected or further work. Such numerical goals for sites considered should be specified in the rule as the minimum requirement. The site characterization report(s) from DOE must include a detailed review of all sites examined and evaluated. Only through

such a complete review can NRC know how well the technical criteria are actually followed.

Staff Response to Comment No. 34:

See response to Comment No. 32.

Comment No. 35: U.S. Geological Survey (18)

A major issue in the regulatory philosophy under development is the proposed requirement to characterize a number of sites in appropriate media by in situ tests at depth before selection of the repository site and issuance of a license to construct. The USGS supports these requirements.

Staff Response to Comment No. 35:

See response to Comment No. 32.

Comment No. 36: The Analytic Science Corporation (28)

We fully concur with the idea of pursuing alternatives in parallel. Indeed, the need to do so was reported five years ago.\* We do not, however, believe it is appropriate to specify in advance the number of sites and media to be explored. While the proposed rule does not explicitly make such specifications, supporting information (44 F.R. 70409, and various media reports) indicates at least a trend toward explicit, although "unofficial" requirements.

\*Ultimate Disposal - A Plan for Achievement," by J. W. Bartlett, in Waste Management '75, Proceedings of the Symposium on Waste Management at Tucson, Arizona, March 24-26, 1975.

Staff Response to Comment No. 36:

See response to Comment No. 32.

THE FOLLOWING THREE COMMENTERS DID NOT BELIEVE THAT MULTIPLE SITE CHARACTERIZATION IS REQUIRED BY NEPA

Comment No. 37: Shaw, Pittman, Potts and Trowbridge (14)

Both in the proposed regulations (see, e.g. proposed §51.40(d)) and in the Supplementary Information accompanying the proposal (see, e.g. 44 Fed. Reg. at 70411), the Commission states that "to satisfy the requirements of NEPA," it anticipates that there will be site characterization for "a minimum of three sites representing a minimum of two geologic media." The Commission also proposes that this multiple site characterization must be substantially completed

before NRC will act on an application for construction authorization. We find no such requirement in NEPA and respectfully submit that NRC should not prejudge the nature or magnitude of the alternatives analysis which may be appropriate.

The current program of the Department of Energy is looking towards examination of a variety of sites in a variety of media. The President's February 12, 1980 policy statement on radioactive waste management codifies this approach.

Immediate attention will focus on research and development, and on locating and characterizing a number of potential repository sites in a variety of different geologic environments with diverse rock types. When four or five sites have been evaluated and found potentially suitable, one or more will be selected for further development as a licensed full-scale repository.

However, the Commission's proposal appears to go beyond the President's program and will likely cause significant delays in the program with little offsetting benefits. We would make a number of points in this regard.

First, it is our opinion that NEPA does not require multiple site characterization of the type contemplated by the Commission. It must be borne in mind that "site characterization" in the context of the proposed regulations is an elaborate, time consuming process including

borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing. . . .

In other contexts, NRC has recognized that different levels of information may be available for alternatives and that the level of information which would be developed from a "site characterization" type process is not required for an alternatives analysis which meets NEPA requirements. This differing level of information was indeed the basis for the "obviously superior" standard developed in the Seabrook line of cases. See New England Coalition on Nuclear Power v. USNRC, 582 F.2d 87 (1st Cir. 1978) (recognizing the fact that "the proposed site will inevitably have been subjected to far closer scrutiny than any alternative site..."). Thus NEPA does not mandate that all alternatives studied be studied in the same detail.

Staff Response to Comment No. 37:

See response to comments 14 and 32.

Comment No. 38: Exxon Nuclear Co. (16)

It would seem to us that the NEPA process (to which DOE must adhere) would allow a site selection process involving a candidate site which adequately meets reasonable technical site criteria previously promulgated by the regulations and was the only site which had been subjected to an extensive and detailed site characterization process. Such an approach is entirely consistent with a total

systems evaluation which takes into account the beneficial role of stabilized waste forms, engineered barriers, and other engineered considerations in meeting disposal criteria.

Staff Response to Comment No. 38:

See response to comments 14 and 32.

ONE COMMENTER ADDRESSED THE RELEVANCY OF RESEARCH AND DEVELOPMENT OF WASTE FORMS AND INFORMATION ON ALTERNATIVE SITES AT THE SITE CHARACTERIZATION STAGE

Comment No. 39: Shaw, Pittman, Potts and Trowbridge (14)

It is not clear why information on alternative sites is relevant at the site characterization stage. Research and development on waste forms, another item required to be included in the site characterization report, would also seem to be of relatively minor relevance at the site characterization stage.

Staff Response to Comment No. 39:

Research and development of waste forms is included at the site characterization stage because it is necessary to ensure that the waste form will be compatible with the host rock environment when a final site selection is made. Evaluations of the behavior of waste forms within various geologic and hydrologic systems would be of value both to the DOE and the NRC when DOE is deciding upon the final site selection.

Information on alternative sites is relevant because it will facilitate NRC's advising DOE whether its program is likely to result in the development of data needed for the timely discharge of its NEPA responsibilities.

ONE COMMENTER SUGGESTED CLARIFICATION ON ALTERNATIVE SITES TO BE CONSIDERED

Comment No. 40: Lowenstein, Newman, Reis, Axelrad and Toll (2)

Second, the regulation should make clear that only alternative sites proposed by DOE would be compared. For reasons discussed above, the scope and timing

of DOE's investigation of alternative sites and media are basic programmatic decisions which should not be reexamined in the licensing process. Such decisions could be utterly frustrated and the licensing process subjected to extraordinary delays, if determined opponents were permitted to engage in endless debate concerning the unlimited number of sites throughout the country which might ultimately also be proven suitable for a repository.

Staff Response to Comment No. 40:

NRC has an obligation to consider alternatives to the site described in DOE's license application. Obviously, it is desirable that DOE itself carry out its screening and characterization activities in a way that will generate the necessary data for reasonable alternatives. But the NRC must leave open the possibility of requiring evaluation of sites not proposed by DOE.

Under 10 CFR Part 60, the NRC considers it extremely unlikely that the "extraordinary delays" would be encountered. The reason for this is that both NRC and members of the public (in accordance with §60.11) will have an early opportunity to focus upon the structure of the DOE site characterization efforts.

This will help to assure that the merits of reasonable alternatives can be determined, in the time-frame of the licensing proceedings, without the need for further protracted debate and litigation. Cf. Natural Resources Defense Council, Inc. v. Morton, 458 F.2d 827, 838 (D.C. Cir. 1972). Given the opportunity that "determined opponents" would have to participate in the process at the site characterization stage, and responsibility of persons to structure their participation so that is meaningful, the NRC thinks the prospects for "endless debate" have been substantially lessened. See Vermont Yankee Nuclear Power Corp. v. NRDC, 435 U.S. 519 (1978).

IV. THE FOLLOWING COMMENTERS ADVOCATED IN-SITU TESTING AT DEPTH AS A REQUIREMENT IN SITE CHARACTERIZATION

Comment No. 41: Natural Resources Defense Council Inc. (12)

The "supplementary information" to the proposed regulations concludes that, ". . . the data needed to establish the ultimate suitability of the site is likely to be obtained only through exploration and in situ testing at depth, i.e., in the proposed rock unit. . . . [W]ithout exploration and in situ testing in the proposed host rock unit, neither the defects nor the key parameters can be determined with confidence." (44 Fed. Reg. 70410). NRDC concurs with this judgement, which is amply justified by recent technical analyses.<sup>8</sup> We are surprised, therefore, that the proposed regulations do not, as they should, require DOE to conduct the necessary exploration and in situ testing at depth.

<sup>8</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A (October 1978); J. D. Bredenhoeft, et al., U.S. Geological Survey, Geologic Disposal of High-Level Radioactive Wastes -- Earth-Science Perspectives, Circular 779 (1978); U.S. Environmental Protection Agency, Report of an Ad-Hoc Panel of Earth Scientists, The State of Geological Knowledge Regarding Potential Transport of High-Level Radioactive Wastes from Deep Continental Repositories, EPA/520/4-78-004 (June 1978); and Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).

Staff Response to Comment No. 41:

See response to Comment No. 32.

Comment No. 42: Natural Resources Defense Council, Inc. (12)

Also, geologic exploration and in situ testing at depth of several potential sites in different geologic media are an essential component of regulations designed to protect the public health and safety of thousands of human generations to come. Important information about the possible future behavior of wastes emplaced in a deep geologic environment can be obtained only by study in that environment. Laboratory tests and investigations from the surface are useful and important, but they are also inherently limited. A high degree of assurance that wastes will remain isolated from the biosphere can be obtained only by extensive study deep underground at the actual site proposed for disposal.<sup>3</sup>

<sup>3</sup>See, Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).



Staff Response to Comment No. 42:

See response to Comment No. 32. The importance of extensive in situ testing at depth was specifically emphasized in the statement of considerations 44 FR at 70410.

Comment No. 43: U.S. Geological Survey (18)

Although the U.S. Department of Energy had been planning to conduct in situ tests early in the construction of any repository, the USGS feels it is useful to require collection of such data at a number of sites prior to full adjudicatory hearings of the licensing process. Those hearings can then proceed on the basis of critical, site-specific data on the candidate host rocks and their environs rather than on inferences derived from a limited number of drill holes supplemented by remote geophysical techniques. Characterization of geologic media is a particularly difficult problem in geotechnical engineering because of the ever-present possibility of lateral changes in the properties of host rocks and the possible presence of inhomogeneities too small to detect by remote or borehole techniques. Direct observation and in situ tests of host media will be the only way to characterize sites with confidence. Tests that should be conducted at or near the repository horizon include: thermomechanical and coupled thermomechanical-thermohydrologic response of the host rock and adjacent formations; hydrologic properties of the host rock and adjacent formations; tests for emplacing, monitoring, and retrieving waste packages; tests of possible interactions between the waste canisters and the rock fluid; and field tests of geochemical reactions which retard radionuclide migration both in the near- and far-fields.

At this point, a statement of caution is necessary. The Commission will have to have clearly defined objectives for these tests so that they are not required to continue for unduly long periods and do not damage the potential isolation characteristics of the host rock. For the first repository, a conservative strategy would be to substantially limit the thermal load and maximum temperatures in the repository. Thermal tests of repository design could therefore be conducted at relatively low temperatures. Some limited higher temperature tests might be useful to set limits on model parameters.

In order to make a meaningful comparison of a number of potential repository sites in a variety of different geological environments, as required by the President's comprehensive waste management plan of February 12, 1980, in situ tests at repository depths will be necessary at four to five sites. Although costly and time-consuming, such characterization at four to five sites will be necessary for a valid consideration of alternatives under the National Environmental Policy Act. The costs of such characterization will certainly not represent wasted funds. If characterization shows that an initially promising site is in fact not suitable, much of value will be learned. If characterization shows a site to be suitable, it can be reserved for later use as a repository if it is not selected for the first.

Staff Response to Comment No. 43:

See response to Comment No. 32.

Comment No. 44: Neville G. W. Cook (19)

The initial technical identification of potential sites must be made on the basis of surface geological and geophysical exploration with, perhaps, limited test drilling. However, it seems to be accepted by experts and laymen alike that the amount and quality of data that can be so obtained is not sufficient to make anything approaching an adequate appraisal of the site. Accordingly, at this level of information it is not practicable to select potentially acceptable sites on technical grounds.

It is generally agreed that site specific technical information of the kind necessary to decide whether or not a site is suitable for the development of a waste repository can be obtained only from exploration and testing at the depth below surface of the proposed repository. In terms of the President's recent Report on His Proposals for a Comprehensive Radioactive Waste Management Program, the Department is directed to evaluate and find four or five sites in a variety of different geologic environments with diverse rock types to be suitable before one or more will be selected for further development as a licensed full-scale repository. This is tantamount to a directive from the President for the DOE and NRC to proceed in accordance with the proposed rule.

Having accepted that the data needed to establish the suitability of a site can be obtained only through exploration and testing at depth, it follows such exploration and testing will have to be done at a number of sites in different geologic media. Otherwise, there is no technical basis for choosing any particular site or medium as offering greater probabilities for the development of a successful repository than any other site or medium. In the absence of relevant hard data meaningful comparisons between different sites cannot be made.

Even underground exploration and testing cannot provide sufficient data to prove that a site will ultimately be adequate and safe for a waste repository. Once a site has been accepted on the basis of such exploratory data, new information will be forthcoming as excavation and engineering measurements proceed. It is most important that mechanisms for the collection of these data and their evaluation be mandated, so to minimize the chances of some adverse feature being overlooked and let pass without correction, or, if sufficiently serious, allowing development of the repository to proceed when, in fact, it should be abandoned.

The proposed rule correctly identifies two of the most important factors in ensuring adequate isolation, namely, the waste form and the (geochemical and hydrological) characteristics of the site. Quantitative information on these factors is essential to any evaluation of the suitability of a site to isolate radioactive wastes from the biosphere.

In addition to the fundamentally important characteristics of the waste form and the site, it is equally important that field techniques for excavation, emplacement of the waste, backfilling and sealing of the access ways and shafts

be shown to be capable of practical implementation, and that their performance be shown to be adequate, before any decision concerning the acceptability of a repository can be made. Furthermore, the performance of engineered barriers to prevent the release of fission products and, perhaps, the long term release of radioactive materials should be assessed in the same context.

Staff Response to Comment No. 44:

The comments of both Mr. Cook and the USGS support the NRC view that in situ testing at depth should be performed if sufficient data are to be obtained to determine whether the surrounding geology will retard waste migration and to make meaningful comparisons among alternatives:

THE FOLLOWING COMMENTERS DID NOT BELIEVE IN SITU TESTING AT DEPTH SHOULD BE REQUIRED:

Comment No. 45: The Analytic Science Corporation (28)

Analysis of present-state data is required at an early stage of the site selection process, i.e., in large measure before testing at depth. Early-on performance of such analysis will minimize the role and benefits of at-depth testing with respect to geologic holdup.

Rather than focusing on "meaningful comparisons", which implies a hierarchy of "better thans", the objective should be to develop an inventory of acceptable sites at which acceptable repository systems can be implemented.

For sites which have not been rejected because of insuperable defects, how the exploration and testing at depth will "...determine whether serious but not readily observed defects are present..." and improve confidence in the determination of defects and key parameters is not clear. If the geology has a high degree of homogeneity, the effort will do little except confirm the fact. If the geology is inhomogeneous (such condition having been deemed not to be an "insuperable defect"), the effort will make determinations only on a micro scale. Surprises might exist beyond the region of exploration but within the volume to be occupied by the total repository.

Parameter measurements will be representative and meaningful only if the geology is reasonably homogeneous. If homogeneity is demonstrated by independent means (which can be expected also to determine if "serious defects" are present), the need for exploration and testing will be constrained.

We interpret the phrase "...serious but not readily observed..." to be concerned with determinations not made under previous scope and/or methods of measurement. In practice, we would expect the scope and methods of prior measurement to have been highly comprehensive in order to arrive at the conclusion that the proposed

site is a good one. The necessary exploration techniques do exist\*; they need only to be used. The results of their use would then dictate what procedures and methods to use at depth. These at-depth efforts could have limited impact on confidence in measured results.

We would like to emphasize that we are not arguing against the concept of exploration and testing at depth. We do argue, however, that what is done and how it is done should be determined on a case-by-case basis. Indeed, the basic strategy of considering alternative sites and media demands a high degree of flexibility on this issue.

\*Philip R. Romig, "Applications of Geophysical Methods in Nuclear Waste Disposal Siting," draft report of the results of Keystone conferences.

Staff Response to Comment No. 45:

The definition of "site characterization" in terms of establishing geologic conditions and ranges of parameters "relevant to the procedures under [Part 60]" deliberately allows case-by-case determination. The staff agrees that a high degree of flexibility is appropriate.

Comment No. 46: Lowenstein, Newman, Reis, Axelrad and Toll (2)

We should emphasize that we concur fully in the thrust of the Commission's proposed rules that would permit site characterization work (including excavation of exploratory shafts and limited subsurface lateral excavations and borings) prior to the filing of an application and the obtaining of construction authority. We agree that the obtaining of information "at depth" with respect to the site for which a license is sought may be important prior to a formal licensing decision, and we do not believe there is any countervailing significant consideration that should impede DOE's ability to obtain such information before a formal licensing proceeding is held. However, we seriously doubt that such information is necessary for purposes of a comparison of alternative sites,\* and we believe that the Commission should not require that it be obtained.

\*In reactor licensing, the Commission has explicitly recognized that it is not necessary for purposes of site comparison that the applicant develop as much information concerning alternative sites as it has developed for the proposed site. Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 529 (1977). The Commission pointed out that requiring such intensive analysis of alternative sites would involve unconscionable costs which should not be imposed in the absence of a mechanism that "would permit banking of any sites which might be previously approved." Id. Since such "banking" mechanism is equally unavailable for repository sites, the foregoing argument is similarly applicable to repository licensing.

It is possible that the Commission seeks to require DOE to perform work "at depth" at alternative sites in order to avoid the appearance of a premature commitment by DOE if it sinks a shaft at only a single site. 44 F.R. 70410. We believe such concern is unwarranted. DOE is entrusted with important responsibilities and is subject to a multiplicity of reviews, including those by Congress. There is no reason to expect that it will not carry on its site selection activities properly. It should not be subjected to arbitrary delays and expenditures for work that may not be required to characterize a particular site.

In this connection, we also believe that the regulation should provide that, as part of authorized site characterization work, the permitted "exploratory shaft" can include shaft work to the extent deemed necessary or desirable by DOE. If, for example, at a particular site, DOE determines that a large exploratory shaft or expanded work associated with the shaft (work comparable in magnitude to a main shaft) would obviate the time and expense later required to expand or seal the shaft, the regulation should enable DOE to take what it considers to be the most effective action.

Staff Response to Comment No. 46:

The NRC believes that site characterization will provide the information needed for the preferred site to be selected from among the realistic alternative sites. Supporting rationale for this belief may be found in the comments of the U.S. Geological Survey and Neville G. W. Cook, among others. The proposed rule does not require in situ testing at depth because it is within the programmatic responsibility of the Department of Energy to develop the site characterization program. However, the NRC continues to strongly suggest that the level of detailed information needed to establish the ultimate suitability of a site will most likely be obtained only through exploration and in situ testing at depth.

In response to the final paragraph of the comment, there is no "authorization" of site characterization by the NRC. The Department of Energy is solely responsible for developing and conducting site characterization at the particular sites that it has selected. The NRC does not believe that a shaft "comparable

in magnitude to a main shaft" of a repository is appropriate at the site characterization stage because no commitment to establishing a repository at any site should already be made by the Department of Energy at the site characterization stage. The NRC believes that a much smaller and less costly exploratory shaft can effectively be used for in situ testing at depth. This belief is supported by existing Bureau of Mines research facilities at Horse Draw, Colorado.

Comment No. 47: Lowenstein, Newman, Reis, Axelrad and Toll (2)

In addition to our disagreement with the possibility that the Commission may seek to dictate the number of sites and media to be investigated by DOE, we also disagree with the Commission's indication that exploration "at depth" will be necessary at the alternative sites. 44 F.R. 70409.

Until the technical requirements of Part 60 are developed, it is highly premature to judge that exploration "at depth" will be needed to satisfy such requirements.

Even when the requirements are known, however, the Commission's regulations should not prejudice or dictate how DOE should obtain the necessary information. The regulations should describe the type of information required, and allow DOE to determine how it can most effectively comply.

Staff Response to Comment No. 47:

See response to Comment Nos. 32 and 46. The NRC does not "dictate" how the Department of Energy should obtain the information necessary in its selection on a final site.

Nowhere in the 10 CFR Part 60 procedural rule is there mention of specific methods or tests which would be required. The NRC reiterates its recognition of the programmatic responsibility of the DOE to develop and conduct the site characterization program at each site that it selects for site characterization. It is important, however, that DOE carry out this program in a manner that will enable NRC to discharge its responsibilities under NEPA.

Comment No. 48: Southwest Research and Information Center (23)

Such in-situ testing should be done only if there is a high probability that such work will be the first stage in actual mine construction--i.e., that the actual shafts for the repository would be the same (or just enlarged versions of the development shaft(s)).

Staff Response to Comment No. 48:

The NRC strongly suggests that in situ testing at depth will provide an essential technique by which the DOE can obtain the type of information necessary to determine whether the surrounding geology will retard high-level radioactive waste migration and to make meaningful comparisons among alternatives. The NRC believes a strong distinction should be made between an exploratory shaft sunk in conjunction with site characterization in situ testing and exploration and the larger, more costly shaft(s) that will be sunk during repository construction after the DOE has committed itself to a final site selection. See also responses to Comment Nos. 32 and 45.

Comment No. 49: Westinghouse Electric Co. (5)

The requirement for at-depth evaluation of alternative sites and geologic media in addition to the preferred site is more than that which is required. Surface investigation and borehole drilling will allow a comparison of potential sites and geologic media which can be identified as alternatives. In order to provide a balance between data required and expenditures, only the preferred site, as determined from the surface evaluations should be investigated in situ. The in situ evaluation will identify whether this preferred site is adequate as a geologic repository. Assuming the site is found to be adequate, there should be no need to further investigate alternative sites since from a surface evaluation, none is clearly superior. The concept that a proposed site must be adequate with no clearly superior alternatives, rather than optimal, has been determined in several Atomic Safety and Licensing Appeal Board Hearings.

If the preferred site should be evaluated as not adequate based upon the site characterization at-depth, the program must then be modified to make the repository adequate by changing the scope of the mission or an alternative repository must be evaluated in depth. This evaluation can be substantiated by the NRC at the time of construction permit application and would eliminate the need for expending resources to evaluate alternate repositories at depth which would not be required for the mission.

Staff Response to Comment No. 49:

See responses to Comment Nos. 32, 45 and 47. The NRC does not require in situ testing at depth as part of site characterization, but continues to anticipate the necessity of testing at depth. As several of the commenters indicate, in situ testing at depth may be the only way to confidently characterize potential sites. Data pertaining to the subsurface hydrologic regime and the mechanical behavior of a potential host rock under the increased stress experienced at depth are generally accepted as important parameters to the evaluation of the suitability of host media to effectively retard radionuclide migration (e.g., USGS and Neville G.W. Cook comments). Yet this type of information is difficult to obtain from surface explorations, and several published studies (e.g., STRIPA research, Sweden) indicate that laboratory and in situ test results may differ from one another by several orders of magnitude.

Ultimately, however, it is the responsibility of the DOE to decide upon the type of program it considers suitable to fully characterize potential sites. The DOE must then select a preferred site from among the characterized sites and submit an application for licensing. Under the procedural rule, the NRC will only be reviewing DOE's program to see whether the information will be developed which is necessary to establish a suitable data base to support a Commission licensing decision consistent with NEPA. The Commission plans to provide, in the technical criteria, further guidance on the types of information that will be needed.



ONE COMMENTER BELIEVES THE NRC SHOULD SPECIFY TESTS AND EXPERIMENTS FOR SITE EXPLORATION AND SITE CHARACTERIZATION

Comment No. 50: Energy Research Conservation and Development Commission (10)

The process for implementing the technical criteria is also vague. The draft regulations indicate that the hydrology, geochemistry, geology, etc., of the proposed sites must be explored. They also indicate that these features need to be explored through a series of tests, including in situ testing at depth. The data obtained from these tests would then be compared against the yet-to-be-developed technical criteria. We envision these criteria to be such things as, for example, tolerance limits for thermal response of the host rock, leach rate limits for the in situ waste form, and ion migration rates under conditions of repository failure. Since the technical criteria are nonexistent, however, the regulations lack an important step; that is, a matching of technical criteria with the specific test or tests which will prove that these criteria can be satisfied by the proposed repository site. Although such a matching is impossible to complete without technical criteria, it can be approached by specifying certain experiments which absolutely must be performed. These experiments can be specified using the current scope of understanding of the technical aspects of repository design, and without obligating NRC to issue a license once the experiments are done. The California Energy Commission has done extensive work in this area and has discussed these experiments in public documents. For example, in addition to the requirements for alternative site and media investigations mentioned above, we recommend that thermal experiments be run at well above design base heat loads to determine if unexpected effects occur and to our ability to predict thermal response. In situ tests should also include radionuclide or stable element migration over reasonable ranges of water temperature, pressure Eh, and pH to examine actual geochemical, diffusion and waste-rock interactions under natural conditions.

Thus, NRC could currently specify within the procedural element of the proposed regulations, a number of specific experiments which would aid in the successful licensing of a repository. Doing so would demonstrate the good faith of NRC to address the scientific issues, including the most basic issue: Are the technical criteria adequate to assure isolation? Furthermore, specifying such experiments is a necessary step if NRC views the licensing process as a means for developing technical criteria.

Staff Response to Comment No. 50:

The DOE has the programmatic responsibility for the site characterization program and must decide what methods and tests will be used to obtain the information necessary for site characterization. The staff does not believe it is appropriate to dictate "a number of specific experiments" as the commenter proposes because both information needs and means of obtaining information may vary with proposed

host rock, as will the range of acceptable values for specifically measured parameters. See responses to Comment Nos. 32 and 45.

The present thinking of the NRC staff on technical issues was published in an ANPR for public comment in the May 13, 1980 issue of the Federal Register. Included were draft Technical Criteria.

#### FOUR COMMENTERS DISPUTED THE COST ESTIMATES FOR SITE CHARACTERIZATION

##### Comment No. 51: U.S. Department of Energy (11)

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 \$50 and \$100 million for each site.

##### Comment No. 52: Shaw, Pittman, Potts and Trowbridge (14)

Third, the Commission underestimates the cost of the site characterization. A figure of \$20 million for a generic hypothetical site is presented. 44 Fed. Reg. at 70410. No basis for this cost is given. Even at this cost, the Commission is calling for expenditures in the neighborhood of \$100 million (since NRC expects DOE to present "a wider range of alternatives" than the three site minimum, 44 Fed. Reg. at 70411. Also, it is our opinion that the \$20 million figure is too low. We note that DOE has proposed to spend \$21 million in Fiscal Year 1981 alone on "further site characterization and protection of the site"

near Carlsbad, New Mexico, even though the Carlsbad site has been under study for many years.

Comment No. 53: Southwest Research and Information Center (23)

"Site Development" work will actually cost many times more than the \$20 million estimate mentioned (44 Fed. Reg. 70410). This assertion is based on the WIPP experience where almost \$100 million has already been spent and no shafts have been constructed, as well as on the basis of uranium mining costs which indicate that one shaft alone would likely cost at least \$20 million.<sup>1</sup>

<sup>1</sup>See for example, Betty L. Perkins, An Overview of the New Mexico Uranium Industry, Santa Fe, N.M., Energy & Minerals Department, 1979, p. 85.

Comment No. 54: Westinghouse Electric Co. (5)

The stated costs of 20 million dollars per site investigation (including in situ experiments) appears to be much too low, depending on the geologic media.

Staff Response to Comment Nos. 52-54:

The cost of site exploration and characterization techniques, particularly drilling operations when included, will be highly dependent upon the rock type being explored. Much of the supportive information for the \$20 million figure was originally derived from a Teknekron, Inc. report entitled, "A Cost Optimization Study for Geologic Isolation of Radioactive Waste," May 1979, prepared under contract to Battelle Pacific Northwest Laboratories for the Department of Energy (B-52864-A-L). Additional information pertaining to exploration and testing techniques was supplied by consultations with Lawrence Livermore personnel under contract to NMSS, early report of the Swedish American Cooperative Program on Radioactive Waste Storage in Mined Caverns in Crystalline Rock, and the publication "Log Interpretation, Vols. I and II," 1979, Schlumberger Ltd, New York.

In order to provide perspective on possible cost ranges, two rock types--granite and tuff--were selected for the cost study. In both cases, the total cost figure for site characterization was less than \$20 million.

In response to public comment on the \$20 million figure, the cost estimated was reevaluated. In reevaluating the original cost figure, the cost estimates of two similar projects were obtained for comparison. The first study was a cost summary for the Bureau of Mines Environmental Research Facility at Horse Draw, Colorado, established during 1977-1978. At this BOM facility in oil shales, a 10-ft diameter shaft was bored to a depth of 2,371 ft, and an 8-ft I.D. steel casing was installed at a depth of 2,352 ft. The total cost summary of \$16 million included site selection and exploration, drilling and casing the shaft, equipping the shaft, and establishing stations for mining bulk samples for processing tests. The scale of the exploration, drilling, and mining operations at Horse Draw, Colorado, is comparable to that envisioned for site characterization.

In April 1980, the American Mine Services, Inc. under contract to NMSS prepared an independent cost estimate of WIPP to evaluate a DOE report "Site Preliminary Design Verification Project Plant (SDVP)" on the isolation cost of an underground test facility at Carlsbad, New Mexico. The total AMS cost figure of \$27 million was based on the existing SPDV plan for WIPP. This plan included two shafts, nearly 12,000 ft of mine development, public utilities and heavy mining equipment.

The WIPP Project has been conducted on a larger and more detailed scale than would be required for site characterization. This disparity in the scale of operations may account for the disparity in cost estimates between WIPP and the scope of site characterization discussed in 10 CFR Part 60. However, it should be noted that even with the disparity in the scope of the operations, the \$27 million figure is within range of the \$20 million estimate for site characterization.

TWO COMMENTERS EXPRESSED THE OPINION THAT THE COST OF SITE CHARACTERIZATION PROGRAMS WAS WELL INVESTED FUNDING

Comment No. 55: Charles Fairhurst (1)

Considering the cost of repository excavation and exploration it should be noted that all U.S. commercial nuclear waste generated to the year 2000 could be accommodated in 2 national repositories. It should be noted that repositories found unacceptable or unnecessary for nuclear waste, although not ideally suited for alternative use, could possibly be put to good effect in other applications, e.g., strategic oil storage, pumped hydro-electric power, etc. In this way the cost of multiple site characterization may be reduced.

Staff Response to Comment No. 55:

The future use of an unsuitable site will be determined in accordance with applicable statutes. It is assumed that if site characterization is ceased prior to completion, a certain amount of funds allocated to the site characterization of a particular site may remain. The Department of Energy may have the options of abandoning the site completely, continuing R&D at the site for scientific purposes, or transforming the site into another type of facility such as those suggested by the commenter, among others.

V. NINE COMMENTERS ADDRESSED THE CONCEPT OF "BEST AVAILABLE"

Comment No. 56: Natural Research Defense Council (10)

There are significant gaps in our scientific knowledge about the geologic disposal of radioactive wastes. These uncertainties have potentially serious implications for the level of safety provided by geologic repositories. Predicting possible future releases of wastes from geologic repositories, furthermore, is an activity of unknown, but probably low, reliability and accuracy. To compensate, at least partially, for these problems in assessing safety, the NRC should assure that during the selection of a disposal environment the "best" of a set of qualified sites is selected.

To help assure that the selection of a site involves comparison of valid alternatives, the NRC should conduct a careful review of DOE's selection of sites for characterization. Before a final determination on whether DOE's sites are "qualified," the NRC should hold a public hearing to obtain the views of members of the public, interested organizations, independent scientists, Indian Nations, and local and state governments.

Staff Response to Comment No. 56:

The procedures provide for a careful review of DOE's selection of sites for characterization. As indicated in the Statement of Considerations (44 FR 70409), there would be opportunity for meetings with members of the public. These might be structured as legislative-type hearings, but the time and effort demanded by formal proceedings would not be justified. Alternatives will be considered to the extent contemplated by NEPA. See response to comments 28 and 32.

Comment No. 57: Environmental Policy Institute (3)

The Commission is not, as the Notice points out, licensing nuclear reactors under this proposed rule. It is licensing a completely undeveloped technology in which every repository is a generically new facility. To this end, the NRC licensing process should be based upon a defense-in-depth approach requiring DOE to find and develop the best site, the best waste form, the best repository design. The proposed rule does not establish these minimum requirements.

Staff Response to Comment No. 57:

The comment addresses topics that will be treated in the technical criteria.

Comment No. 58: Environmental Policy Institute (3)

Second, "Construction Authorization" (Sec. 60.31) is not dependent upon any finding that the best site, to say nothing of the best site among those characterized, be selected. While there is a recognition that the construction authorization, as envisioned by the Commission, is a complex process and extends beyond the issue of site suitability, DOE has embarked upon a "systems approach" to repository development wherein the site decision cannot be removed from the other components of a repository development. Similarly, choice of a site represents a fundamental decision in many respects on a repository technology. To omit a "best available site" determination from Sec. 60.31 "Construction Authorization" is a serious flaw especially in light of DOE's penchant for developing sites of convenience on its own reservations.

Staff Response to Comment No. 58:

The repository will need to conform to the technical criteria established by NRC. The NRC does not rule out the possibility that several sites may meet this test, in which case each could be found acceptable for licensing. Nevertheless, a

comparison will be necessary in order for NRC to evaluate alternatives in accordance with NEPA.

Comment No. 59: Sierra Club (9)

Similarly, the suggested "Common defense and security" finding (Section 60.31(b)) is so vague as to be of no consequence.

This Section should include a "best available site" standard, in addition to stricter versions of the "Safety," "Common defense and security," and "Environmental" standards currently in the Section.

Staff Response to Comment No. 59:

See response to Comment No. 58. With respect to common defense and security, the staff believes that reliance upon DOE, which itself is subject to the Atomic Energy Act, is appropriate. In providing for NRC to exercise licensing authority, Congress wanted to make sure that issues of health and safety were reviewed independently, with opportunity for public participation. Extending NRC's substantive review to common defense and security issues would not promote the achievement of this objective.

Comment No. 60: Westinghouse Electric Co. (5)

The preamble's references to "best" (pages 70410 and 70412) make inevitable a never-ending quest for a licensable repository site. It is unlikely that a "best" site can ever be determined. More likely, many sites will be found, each capable of meeting realistic licensing criteria provided a systems approach is utilized.

The National Academy of Sciences recently concluded that it is not necessary to look upon HLW disposal as a problem to which a perfect solution must be found before any action can be taken. They emphasized that storage of waste at geologic sites would engender much smaller risk to the public than that of routine emissions from the rest of the fuel cycle.\* NRC's rulemaking on 10CFR 60 should take this into account. A licensing philosophy based on a "best" site, a "best" waste form, or a "best" waste package should be avoided. Instead, an overall systems approach should be adopted to license a geologic repository. Realistic licensing criteria should be developed during the design, construction, and operation of repository system demonstrations which should become a required element in near-term national programs.

\* Handler, P. et al., "Energy in Transition, 1985-2010," Committee on Nuclear and Alternative Energy Systems (CONAES), National Academy of Sciences, D.C., December 1979.

Staff Response to Comment No. 60:

See response to Comment 58. The proposed rule does not require the selection of a "best" site, waste form, or package. The technical criteria that will apply are to be published separately.

Comment No. 61: Shaw, Pittman, Potts and Trowbridge (14)

Second, the Commission appears to require a higher level of site information on alternates than does the President's statement. The President's statement called for a finding of the potential suitability of four to five sites. This type of determination would not necessarily involve the high degree of data contemplated by the site characterization process with its requirements for exploration at depth of every site.

Staff Response to Comment No. 61:

See response to Comment Nos. 32 and 45.

Comment No. 62: Shaw, Pittman, Potts and Trowbridge (14)

Fourth, we are concerned that NRC is establishing perfection as the standard for siting decisions, rather than as a goal. Thus, NRC indicates its intent that DOE present the Commission with "a slate of candidate sites that are among the best that reasonably can be found." 44 Fed. Reg. 70410. The appropriate standard should be the selection of a site, chosen from among reasonable alternatives, which meets NRC's technical criteria. In determining the reasonableness of the alternatives, the NRC is entitled to -- and should -- consider the delay factor which could result from awaiting the discovery of the "best" sites. See Porter County Chapter of Izaak Walton League v. AEC, 533 F.2d 1011, 1017 (7th Cir.), cert. den. 429 U.S. 945 (1976).

Staff Response to Comment No. 62:

See response to Comment No. 58.

Comment No. 63: Rockwell International (20)

We would like to express our concern that the proposed rulemaking appears to require that the "best" available site be selected. This is accomplished by requiring full site characterization of a number of sites and geologic media (minimum of three, but an implication of many more than three) before selecting any site. We believe that technical criteria should be established to limit any release to the biosphere to less than is now legally acceptable under 10 CFR 20. Then, if a site and its proposed waste form can be shown to meet the technical requirements, it should be deemed acceptable as a repository.



To continue to search for the "best" will be fruitless in this ever improving technological world we live in.

One of our major concerns is that by using a "best" requirement, any obstructionist organization can effectively block progress in constructing a safe repository.

Comment No. 64: Rockwell International (20)

The proposed rule also requires that the Department address and compare alternative waste forms. We concur that DOE should continue to develop better and better waste forms; however, our concern here is also that the "best" will be required and that the "best" form will always be something not quite developed. We believe that, as with site selection, specific technical criteria should be established to limit the release from the waste form. Once a waste form is demonstrated to meet these technical requirements, it should be certified for burial in a repository.

Staff Response to Comment Nos. 63 and 64:

See responses to Comment Nos. 58 and 60.

Comment No. 65: Westinghouse Electric Co. (5)

It is our understanding that forthcoming technical criteria, 10CFR60 Subpart E, will place no reliance on the geology for radionuclide containment during the first 1,000 years. If this is the case, the proposed licensing procedures concerning site selection are too conservative (e.g., see Attachment Item 1). However, we believe that due reliance should be placed on geologic barriers, and that performance criteria should apply to the overall repository system. Therefore, NRC should not finalize the proposed rule until the forthcoming technical criteria are published and acted upon.

Staff Response to Comment No. 65:

The staff does not understand why the commenter considers the licensing procedures to be too conservative. Even if the technical criteria contain a provision such as the one that is stated, the long-term consequences of releases to the environment would warrant the use of the site selection process contemplated by §60.11.

Comment No. 66: Energy Resources Conservation and Development Commission (10)

The most important criterion to be met concerns the geologic disposal concept itself. Our first concern is that the proposed regulations do not address adequately the contribution which geology makes to successful isolation. None of the criteria for site characterization includes provisions for locating a geologically stable site which provides assurances for predicted stability over

the life of the repository. Site studies which do not consider geologic history may neglect adverse future changes in the ability of a site to isolate wastes for thousands of years. Therefore, we recommend that the proposed rule adopt the following guideline which was discussed in the NRC conference on State Review of Site Suitability Criteria for High-Level Radioactive Waste Repositories which was held in Denver, New Orleans, and Philadelphia during September, 1977:

"The repository site should be shown to be geologically stable, i.e., it shall not have experienced geological events during the past  $10^7$  year period of a type and magnitude such that the long-term effectiveness of the repository could be compromised were similar events to occur at some future time."

In addition, we recommend that the geology of a proposed site be classified as "important to safety."

Second, the generally accepted view is that the geologic disposal concept has not been verified as a method which will assure long-term isolation of high-level radioactive wastes. This view is reflected in the Interagency Review Group's (IRG) report and in President Carter's recent statement on nuclear waste disposal. The licensing regulations therefore should require NRC, prior to authorizing construction, to 1) hold a formal proceeding and 2) make a specific finding on the feasibility of geologic disposal at the proposed site.

Staff Response to Comment No. 66:

An ANPR published in the May 13, 1980 issue of the Federal Register contained draft technical criteria that addressed the evaluation of tectonic and geologic stability of potential repository sites. These criteria dealt with the stability of the candidate sites during the recent geologic past (0-2 million years) as well as with identified potentially adverse conditions that may affect the candidate sites during the next ten thousand years. The commenter will have an opportunity to submit its views on the proposed technical rule when it is published.

In response to public comment, the rule has been revised to provide for mandatory hearings at the construction authorization stage. (10 CFR 2.104)

Comment No. 67: Mississippi Department of Natural Resources (15)

It is stated in the Scope of Proposed Rule section, "The technical criteria against which the license application will be reviewed are still under development." Are the States going to be consulted during the development of these criteria, as we have been led to believe? If so, why isn't it indicated in the rules? If not, why not?

Staff Response to Comment No. 67:

The Advance Notice of Proposed Rulemaking and draft Technical Criteria for regulating geologic disposal of high-level radioactive wastes, 10 CFR Part 60, was published for comment in the May 13, 1980 issue of the Federal Register. The advance notice informed the public and interested parties concerning the status of efforts related to the development of technical criteria to become part of 10 CFR Part 60. Attached to this notice were draft technical criteria. These criteria were the results of efforts of the staff to accommodate and include the best thinking which has been made available to the NRC staff from technical experts in the form of technical points, suggestions and criticisms on previous draft technical criteria. Comment was invited from all facets of Federal, State, Indian, and local governments, utilities, private individuals, and interested organizations. The Advance Notice of Proposed Rulemaking was specifically published at this early stage to ensure early as well as broad input.

Comment No. 68: The Analytic Science Corp. (28)

This approach can in fact be expected to produce a multiplicity of acceptable sites, albeit with differing system design details. Refined evaluation leading to the Site Characterization Report may then show that it is appropriate to focus attention and resources on one or two sites at most.

It is obvious that this approach can be used effectively only if the technical criteria for assessing repository system performance are in place. We therefore urge early promulgation of such criteria. We also note a need for such criteria to be internally consistent and flexible enough to accommodate a variety of repository system concepts. We would also like to observe that the technical criteria and the procedures addressed in these proposed rules are closely linked. In an ideal world, the procedures would be deduced from the technical criteria.

Staff Response to Comment No. 68:

See response to Comment No. 67. The NRC is continuing to develop the technical criteria.

VI. THE FOLLOWING FOUR COMMENTS ADDRESSED THE CONCEPT OF BANKING OR RESERVING REPOSITORIES

Comment No. 69: U.S. Department of Energy (11)

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 geological 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.

Staff Response to Comment No. 69:

The DOE proposal for "banking" sites does not appear to be incompatible with the proposed regulation. However DOE's use of term Site Characterization Report differs from that in the proposed rule, which provides for such a report to be submitted prior to characterization. This inconsistent terminology could result in some confusion.

Comment No. 70: Exxon Nuclear Co., Inc. (16)

To the extent that the Department of Energy, to prudently manage a program for which it is the designated lead agency, may elect to investigate one or more backup sites and address these alternate sites and plans for investigating them in its site characterization report should be viewed as the DOE's prerogative. Should this approach be adopted by the DOE, it would then be possible to "bank" these alternate sites for location, can be shown with high confidence to meet the NRC's criteria, then submitting an application for a construction permit should not have to wait until other sites are fully characterized.

Staff Response to Comment No. 70:

Characterization of the other sites must be sufficient to enable the Commission to discharge its responsibilities under NEPA.

Comment No. 71: U.S. Geological Survey (18)

In order to make a meaningful comparison of a number of potential repository sites in a variety of different geological environments, as required by the President's comprehensive waste management plan of February 12, 1980, in situ tests at repository depths will be necessary at four to five sites. Although costly and time-consuming, such characterization at four to five sites will be

necessary for a valid consideration of alternatives under the National Environmental Policy Act. The costs of such characterization will certainly not represent wasted funds. If characterization shows that an initially promising site is in fact not suitable, much of value will be learned. If characterization shows a site to be suitable, it can be reserved for later use as a repository if it is not selected for the first.

Staff Response to Comment No. 71:

The NRC believes this comment is probably correct. As the proposed rule had indicated, to satisfy the requirements of NEPA, the Commission anticipates that DOE will characterize a minimum of three sites representing a minimum of two geologic media.

Comment No. 72: Atomic Industrial Forum (25)

We would like to note that the IRG report also states, page 62 of TID-29442, "...a number of potential sites in a variety of geologic environments should be identified and early action should be taken to reserve the option to use them if needed at any appropriate time. In order to avoid working toward and ultimately having a single national repository, near-term options should create the option to have at least two (and possibly three) repositories become operational during this century, ideally, in different regions of the country."

Staff Response to Comment No. 72:

The 10 CFR Part 60 procedural rule does not preclude DOE from submitting a license application at some future date for a site from among the remaining candidate sites after a site has been selected for the original repository. It is anticipated that in the event of a second license application all pre-application and application requirements shall be met.

VII. NINE COMMENTERS ADDRESSED THE TOPIC OF AN ENVIRONMENTAL IMPACT STATEMENT

Comment No. 73: Southwest Research and Information Center (23)

Both site characterization and licensing of nuclear waste depositories are significant federal actions under NEPA. Therefore, the EIS process must be followed at both stages. An Environmental Impact Statement should be submitted with the Site Characterization Report. Such an EIS is necessary to establish the environmental impacts of actual site characterization as well as provide the public with adequate data in order to evaluate the Site Characterization Report. Thus, §60.11(f) should be rewritten to require that an EIS be submitted, and

not just leave it to the discretion of the Department. Potential environmental impacts associated with site selection and site characterization must be carefully evaluated before the NRC can approve any site characterization report.

Staff Response to Comment No. 73:

Site characterization involves no major Federal action on the part of NRC. Accordingly, it is for DOE, and not NRC to determine, at that stage, how the requirements of NEPA are to be observed. It should be noted that DOE states that it will issue an EIS (Mr. Meyers' letter, PDR #11).

Comment No. 74: Southwest Research and Information Center (23)

There is strong legal precedent for seeing actual mining and development work as part of the actual site construction, thereby requiring an EIS. Such construction should require concurrence from NRC and the host state before proceeding. The rule, therefore, should recognize that in situ work, under whatever name, is very important and should be undertaken only after alternatives have been considered and stringent technical criteria have been met.

Staff Response to Comment No. 74:

The Statement of Considerations explained why the Commission believes site characterization should be treated apart from construction and why site characterization should not require formal NRC proceedings. Whether an EIS is required at characterization stage is thus to be determined by DOE. In any event, as required by NEPA, DOE will have to consider alternatives.

Comment No. 75: Exxon Nuclear Company (16)

60.11(f) It is indicated that the Department may prepare an environmental impact statement; however, per 10 CFR 51, this is a function of the NRC for other licensing actions under Part 50, 60 etc.

The process of site characterization should not require the submittal of an EIS. Using 60.2(n)'s definition of site characterization, it seems likely that this activity would be expected from NEPA procedures under 10 CFR 1021.5 which provides NEPA exemption for classes of DOE activities, specifically 1021.5(d)(9) information gathering, analysis and dissemination and 1021.5(d)(11) actions in the nature of conceptual design or feasibility studies.

Staff Response to Comment No. 75:

The review by the Director of NMSS of a Site Characterization Report submitted by the DOE is not a licensing action. The NRC agrees that DOE has the responsibility to determine whether an EIS is prepared prior to site characterization.

Comment No. 76: Westinghouse Electric Company (5)

It should be clarified throughout that DOE regulations require an Environmental Assessment for each site characterization, and not an Environmental Impact Statement.

Staff Response to Comment No. 76:

See response to Comment No. 75. Also, the comment letter of Mr. Sheldon Meyers, Deputy Assistant Secretary for Nuclear Energy, Department of Energy (PDR #11), in which the DOE notes that it intends to prepare an Environmental Assessment to support the designation of preferred sites for detailed characterization.

Comment No. 77: James G. McCray (8)

It should be clearly specified that no EIS is necessary for the Site Characterization Report.

Staff Response to Comment No. 77:

See response to Comment No. 75.

Comment No. 78: Natural Resources Defense Council (12)

The Commission states in its rationale for a site characterization report that the environmental impacts of site characterizations are "relatively insignificant" and that the principal impact will be the "management of the spoils from excavation of an exploratory shaft" measuring 5000 cubic yards. (44 Fed. Reg. 70409; footnote 4.) This statement fails to consider the economic and political impacts of land withdrawals, and the potential impacts of aquifer disruption and reclamation of the site if subsurface exploration results in abandonment. Furthermore, the NRC's view that site characterization has insignificant environmental impact is inconsistent with other statements suggesting that the Department may decide to prepare an "environmental impact statement with respect to site characterization activities." (44 Fed. Reg. 70417.)



Thus, we believe that the Commission's evaluation of the potential environmental impacts of site characterization is incorrect. Undoubtedly, DOE will have to prepare an environmental impact statement on any proposed site characterization, pursuant to the requirements of NEPA. This NEPA statement, and a discussion of potential environmental consequences in its site characterization report, should be key elements of the NRC's review of DOE's plans. The potential environmental impacts during site characterization explicitly must be found acceptable, and there must be no preferable alternatives, before the NRC approves DOE site characterization reports.

Staff Response to Comment No. 78:

The statement that the environmental impact would be "relatively insignificant" was made in the context of considering whether deferral of formal proceedings to a point after characterization would be appropriate. The staff continues to believe that for purposes of answering that question, the probable impacts - including those identified by the commenter - are likely to be "relatively insignificant." The statement was not intended to suggest that characterization would not be a major Federal action requiring preparation of an EIS; however, the NRC believes this is a determination that should be made by DOE.

Comment No. 79: Sierra Club (9)

The Commission should prepare an environmental impact statement for the Proposed Rule. This would be consistent with the Final Report of the Interagency Review Group on Nuclear Waste Management and President Carter's February 12 Policy Statement, both of which stressed the importance of NEPA in the nuclear waste management program. (See 70412)

Staff Response to Comment No. 79:

As noted in the Statement of Considerations, an Environmental Impact Appraisal setting forth the basis for the decision not to prepare an EIS was made available for public inspection. In the absence of any analysis on the part of the commenter, the staff believes the results of its appraisal are correct.

Comment No. 80: State of Wisconsin Department of Administration (31)

Development of a mined repository in Wisconsin would be considered similar to the development of a mine for mineral extraction. Both processes have four stages: reconnaissance, exploration (drilling), prospecting (taking of samples by trenching or bulk sampling), and mining. The last three activities are regulated by the Wisconsin Department of Natural Resources. Site characterization as described in the proposed rule would be considered prospecting in Wisconsin. Prospecting generally requires an environmental impact assessment, and site characterization activities such as described in the proposed rule would probably require preparation of a full environmental impact statement.

Staff Response to Comment No. 80:

See response to Comment No. 75.

Comment No. 81: Atomic Industrial Forum (25)

Our general comment also applies to the proposed modification to 10 CFR, Paragraph 51.40(d). We see no technical or environmental basis for the requirement that an environmental report must include "site characterization data for a number of sites in appropriate geologic media." A recommended approach would be for DOE to show that at the particular site for which construction authorization is sought, the geologic conditions fall within NRC technical requirements. The DOE submission could be supplemented by the results of preliminary borings and geophysical testing for alternate candidate sites.

Staff Response to Comment No. 81:

See response to Comment Nos. 32 and 45.

VIII. FOUR COMMENTS ADDRESSED THE UNIQUE STATUS OF INDIAN TRIBES

Comment No. 82: Council of Energy Resource Tribes (7)

As presently drafted, the licensing procedures fail to account for the unique status of Indian tribes and Indian lands. This oversight can be corrected by amending these regulations in at least two ways.

First, Indian tribal governments should be provided an adequate opportunity to participate in the licensing process. Separate consideration for Indian tribes is necessitated by the absence of state jurisdiction over land-use and resource matters on Indian lands as well as by the special relationships between the federal government and Indian tribes.

Second, the legal and institutional aspects of site acquisition and regulatory controls should be addressed more thoroughly. In their current form, the regulations implicitly assume that the applicant has title to, and jurisdiction over,

the site. The extremely complex nature of land-ownership patterns in the western states could pose problems which are as formidable as the technical questions. The unique status of tribal lands illustrates this situation. The Commission could benefit from expanding its review of such matters throughout the licensing process.

Staff Response to Comment No. 82:

An Indian tribe whose interest was affected by licensing proceedings could participate in the proceedings as an intervenor. The technical criteria will include regulations that address land-ownership considerations.

Comment No. 83: Council of Energy Resource Tribes (7)

Recent federal legislation and federal administrative actions have begun to accommodate the legal distinction between Indian tribal governments and their state and local counterparts. Examples include the Surface Mining Control and Reclamation Act and Part I of the Uranium Mill Tailings Control and Reclamation Act. In addition, the Bureau of Land Management provides for the direct participation of Indian tribes in its Coal Management Program on a par with affected states. Likewise, the Environmental Protection Agency has initiated direct funding to Indian tribes for their air and water quality management programs.

CERT urges that NRC to amend the proposed regulations to provide expressly for the participation of affected Indian tribes whenever a potential disposal site could have an impact on tribal land. Attached to this letter are some possible language changes which could achieve this purpose.

Staff Response to Comment No. 83:

The language has been revised to provide for participation of Indian tribes more nearly on a par with affected States. (NOTE attachment of language changes was omitted from Cart's comment letter.)

Comment No. 84: U.S. Department of Energy (27)

The Department of Energy (DOE) believes the proposed rules to be inadequate with regard to the participation of Indian Tribal governments. A failure to involve Tribes in the initial process will result in later practical and political difficulties which would be unnecessary. Further, to include Indian Tribal governments would be consistent with their unique governmental relationship with the U.S. Finally, to ignore Tribes would cause gaps in the effective implementation of HLW disposal because States have no jurisdiction over Tribes, absent express Federal legislation to the contrary.

Therefore, the DOE recommends the following language changes:

FR, Vol. 44, No. 236, Thursday, December 6, 1979

FR page 70413, Part 2

10 CFR 2.101

§(f)(4)(ii) following "the county" insert "or Indian Tribe,"

(iii) following "State," insert "Indian Tribe,"

(5) following "State," insert, "Indian Tribe"

10 CFR 2.103(a) following "State," insert "Indian Tribe"

10 CFR 2.104(e) following "county," insert "or Indian Tribe"

FR Page 70416, Part 60

§60.2(1) insert in lieu of the present (1), the following definition "Indian Tribe" means any Indian Tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians."

Renumber the present (1) through (o) as (m) through (p).

Subpart B

§60.11(a)

New (6) "a description of conformity with P.L. 95-341" renumber old (6) and (7) as new (7) and (8). Old (6) (new 7) following "public," insert ",Indian Tribal"

(b) following "State," insert ",Indian Tribes"

(c) insert at the end of the sentence, after "contiguous States" the following "and to the chief executive of any affected Indian Tribe"

(h) following "State" to insert "and Indian Tribes"

FR page 70417

§60.21(b)

new (4) "A certification that the Department has exclusive jurisdiction over the lands designated in the application and that the Department holds such land in fee simple without encumbrances"

FR pages 70420 and 70421

Subpart C

§60.61(a) After "request of a State" insert "or an affected Indian Tribe," and after "representatives of State" insert ",Indian Tribes"

(c) After "States" insert "and Indian Tribes,"

§60.62(a) After "scope of State" insert "or Indian tribal;" and after "with the State" insert "or Indian Tribe;" and after "by the State" insert "or Indian Tribe."

(b) After "States" insert "and Indian Tribes;" and after "proposal for State" insert "or Indian Tribal;" and after "A State's" insert "or an Indian Tribe's."

(c) After "State" insert "or the chief executive of the Indian Tribe"

(1) After "State" insert "or Indian Tribe"

(2) After "State" insert "or Indian Tribe"

(3) After "State" insert "or Indian Tribe"

(5) After "State" insert "or Indian Tribe"

- (d) After "If the State" insert "or Indian Tribe," and after "exchange of State" insert "or Indian Tribal"
- §60.83(a) After "representatives of the State" insert "or Indian Tribes" and after "by the State" insert "or Indian Tribe."
- (b)(1) After "State" insert "or Indian Tribe"
- (2)(i) After "State" insert "or Indian Tribe"
- (c) After "State" insert "or to the chief executive of the originating Indian Tribe."

Staff Response to Comment No. 84:

Changes have been made to provide more fully for participation by Indian tribes. The jurisdictional-certification provision has not been adopted. The application will identify DOE's controls; the standards by which the adequacy of such controls will be measured will be included in the technical criteria.

Comment No. 85: Council of Energy Resources Tribes (7)

The regulations assume that the site(s) for waste storage will be owned or acquired by the federal government. However, the complex nature of land ownership in the western United States may present obstacles to the siting of storage facilities. The proposed regulations devote considerable attention to important technical matters, but fail to provide for review of these legal and institutional matters. CERT feels that the Commission would be advised to analyze these aspects of the site in tandem with the technical reviews. On Indian reservations the right to surface or subsurface use of the land is obtained only, by written contract with the tribe and the approval by the Secretary of the Interior. These agreements are for a limited time only, and can be extended only by the tribe's consent. It would be wasteful to proceed with a site characterization review on the assumption that Indian lands, could be acquired, only to find this assumption totally unfounded. Such problems could be prevented by requiring certification of ownership and jurisdiction as part of the general license information. Such information is a standard language for this change also is included in the attachment.

Staff Response to Comment No. 85:

The legal and institutional matters will be reviewed in tandem with the technical reviews. Standards for consideration of land ownership issues will be included in the technical criteria.

IX. FOUR COMMENTERS ADDRESSED THE ISSUE OF PUBLIC PARTICIPATION

Comment No. 86: Environmental Protection Agency (26)

The proposed rule appears to provide adequate opportunity for review by the public and by local, State, and Federal agencies. In addition, we note that the President intends to establish a State Planning Council which will strengthen intergovernmental relationships and help fulfill the joint responsibilities for the protection of public health and safety in radioactive waste matters.

Staff Response to Comment No. 86:

The recommendations of the State Planning Council will be considered in a timely manner.

Comment No. 87: Natural Resources Defense Council (12)

The intent of the proposed provisions for state and general public involvement in the NRC's reviews of DOE's plans are also highly desirable. The federal government in the past gave too little attention to the advice and concerns of state officials, independent scientists and the general public, particularly at the early stages of investigating and developing facilities for long-term storage or disposal of radioactive wastes.

Staff Response to Comment No. 87:

The NRC welcomes comment from State, Indian and local government, as well as the scientific community and the general public, on all aspects of the HLW disposal problem. The NRC intends to obtain input from the public during the early stages of the HLW disposal program by publishing a notice in the Federal Register when the DOE submits a site characterization report to the NRC Director of NMSS. This notice shall publicly identify the site(s) selected for characterization by the DOE. The Director of NMSS will prepare a draft site characterization analysis of DOE's site characterization report and publish a notice of availability in the Federal Register. This information will then be made available at the Public Document Room.

Comment No. 88: Sierra Club (9)

The Proposed Rule should also require formal proceedings for public consideration of DOE's waste form research and development program. The Proposed Rule should contain other action-enforcing provisions enabling the Commission to ensure that the waste form program is sufficient.

The Proposed Rule should establish an intervenor funding program for persons who contribute in a significant fashion to any proceeding which is a part of the regulatory process described in the Proposed Rule. The NRC currently has the power to establish such a program.

Staff Response to Comment No. 88:

NRC may establish waste form criteria and consider a proposed waste form in the course of licensing proceedings, but the DOE has the programmatic responsibility for the waste form research and development program. Therefore, it would be inappropriate for the NRC to require the type of formal proceedings proposed by the commenter.

However, paragraph 60.11(a)(7) of the proposed rule requires the DOE to include a description of the research and development activities being conducted by the DOE that deal with the waste forms which may be considered appropriate for the sites to be characterized. The Site Characterization Report will be available for public comment in accordance with notice entered in the Federal Register by the NRC. The NRC will welcome comments on the DOE's waste form program, along with comments on the other aspects of the Site Characterization Report, insofar as such comments may assist in the preparation of NRC's site characterization analysis. The question of intervenor funding is a broader question beyond the scope of this rulemaking action. Moreover, a specific licensing regulation is an inappropriate place to address a provision which is a matter of general Commission practice.

Comment No. 89: Southwest Research Information Center (23)

§60.62(c)(4) seems to imply that public participation be left exclusively to the states. NRC's rule should indicate that both the DOE and the states are expected to solicit and respond to citizen input. Specifically, §60.11(a)(6) should indicate that not only the means used to obtain public input but also the substance of such input and the Department's response to such comments be reported.

Furthermore, NRC should have public participation in its proceedings, including funding for such participation. At a minimum, a reimbursement method of citizen funding, similar to that used in the Public Utility Regulatory Policy Act (PURPA) should be included so that those citizen groups who are substantially involved in licensing proceedings can be reimbursed. Such involvement is necessary for a sound, scientific program which can merit public confidence.

Public participation should include opportunity for all intervenors to present testimony and cross-examine witnesses in any formal proceedings. Through such a process it will be clear whether information from all sides is accurate and can withstand scrutiny.

Finally, information must be readily available to the public, and not only through the NRC Public Document Room. Various public document rooms should be established throughout a potential host state. Public university and state libraries can well fill this role. Additionally, important documents should be made available directly to citizen organizations who have demonstrated an interest in nuclear waste disposal issues. Such groups should be put on a mailing list and receive documents as they become available.

Staff Response to Comment No. 89:

NRC cannot mandate that other agencies follow specified public participation procedures. The proposed rules, which call for DOE to identify how it has involved the public, go as far as is appropriate for us to do.

With respect to participation in NRC proceedings, however, intervenors enjoy full rights of parties in accordance with §2.714 of 10 CFR Part 2. The rules already contemplate the establishment of multiple public document rooms. The staff expects to be able to make important documents available, on a routine basis, to organizations with a special interest in nuclear waste disposal. The question of intervenor funding involves policy considerations beyond the scope of the present rulemaking.



CHAPTER 2

SPECIFIC COMMENTS ON THE TEXT OF THE PROPOSED RULE

SUBPART A - GENERAL PROVISIONS, §60.2: DEFINITIONS

ON THE DEFINITION OF THE TERM "CANDIDATE AREA"

Comment No. 90: U.S. Department of Energy (11)

NRC Proposed Wording:

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

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.

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.

Staff Response to Comment 90:

The NRC has not changed the basic concept because it believes that geologic and hydrologic characteristics are key elements in defining areas to be screened.

ON THE DEFINITION OF THE TERM "DECOMMISSIONING"

Comment No. 91: Exxon Nuclear Co. (16)

60.2(c), 60.51 and 60.52. The term "Decommissioning" has a significantly different meaning in this Part than it has for other types of facilities. We would rather see a different term used to identify the activities of "Final backfilling of subsurface facilities, sealing of shafts, and decontamination and dismantlement of surface facilities." On the other hand, if it is intended to actually terminate (60.52 uses the word "may") such licenses when the above-mentioned activities are complete, the term may be appropriate.

Comment No. 92: Atomic Industrial Forum (25)

The term "decommissioning" has a significantly different meaning in this part than in other parts of 10 CFR. We suggest a different term be used, such as "Permanent Closure."

Staff Response to Comment Nos. 91 and 92:

Decommissioning is an activity that precedes termination of a license. The staff envisages the possibility that a license may be terminated after closure has occurred, particularly if the licensee has sufficient control of land uses and an adequate program for future monitoring. Whether surveillance beyond that point requires that the NRC continue to exercise licensing jurisdiction is a question which can best be determined when the occasion arises. However, since conceptually we foresee the termination of the license, we believe the choice of the term "decommissioning" is proper.

ON THE DEFINITION OF THE TERM "DISPOSAL"

Comment No. 93: Exxon Nuclear Company (16)

60.2(e) and 60.21(c)(12)

By definition, there will be "no intent to retrieve HLW for resource values," however, 60.21(c)(12) requires "a description of plans for retrieval and alternate storage...." If retrieval capabilities have to be incorporated into such facilities, the definition of "disposal" should be made consistent with that intent.

Staff Response to Comment No. 93:

There is no inconsistency. Even if there is no intent to retrieve HLW for resource values, it may prove to be necessary to retrieve the HLW at any time, if the geologic repository proves to be unsuitable for disposal of radioactive wastes, until a specific determination has been made that the applicant should be permitted to make the waste irretrievable or more difficult to retrieve. See response to Comment No. 94.

Comment No. 94: U.S. Department of Energy (11)

10 CFR 60.2(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.

Staff Response to Comment No. 94:

Based upon a review of the contexts in which the term "disposal" appears (§§60.2(g); 60.21(c) and 60.31(a)) we have revised the definition of the term.

Comment No. 95: Atomic Industrial Forum (25)

We suggest that the words "storage space" in Item (2) be changed to "repository." The word storage implies temporary rather than permanent.

Staff Response to Comment No. 95:

See response to Comment No. 94.

ON THE DEFINITION OF THE TERM "GEOLOGIC REPOSITORY"

Comment No. 96: U.S. Department of Energy (11)

10 CFR 60.2(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."

Staff Response to Comment No. 96:

We believe the concept of a "geologic repository," as defined in the proposed rule, is a useful one. The extent to which natural events occurring at various locations within the geologic repository may render the geologic repository operations area unsuitable will be dealt with in the technical criteria.

ON THE DEFINITION OF THE TERM "HIGH-LEVEL RADIOACTIVE WASTE" OR "HLW"

Comment No. 97: Atomic Industrial Forum (25)

With respect to Item (i), we would note that all irradiated reactor fuel is not High-Level Waste. It may be a valuable resource. Therefore, for purposes of this definition, we recommend that the words "spent reactor fuel intended for disposal" be substituted for "irradiated reactor fuel."

Staff Response to Comment 97:

It is the Commission's view that, for purposes of Section 202 of the Energy Reorganization Act, irradiated reactor fuel--whether or not intended for disposal--is high-level waste.

Comment No. 98: Westinghouse Electric Company (5)

In some cases these proposals go beyond licensing procedures, and appear to establish national policy. For example, irradiated reactor fuel should not be included in the definition of high-level waste, 60.21(i). Such a definition preempts a change in the existing National Policy on reprocessing.

Staff Response to Comment No. 98:

See response to Comment No. 97.

Comment No. 99: Environmental Protection Agency (26)

EPA is also concerned about apparent inconsistencies in the terminology for the materials to be included in a license. Various terms used include: high-level radioactive waste; waste radioactive material; source, special nuclear, or byproduct material; radioactive material; and waste. This is noted in proposed Part 2.101(f) (1), Part 2.103(a), Part 2.104(e), Part 60.3(a), Part 60.21 (C)(5), Part 60.31(a)(1), and Part 60.41. Either the terminology should be made consistent or the differences should be explained in the text.

Staff Response to Comment No. 99:

§60.31(a)(1) has been modified to refer to "radioactive material" instead of "wastes." The other usages are correct as proposed. It is, technically, the possession of "source, special nuclear, or byproduct material" that gives rise to need for a license under the Atomic Energy Act. But only if the facility is used for the storage of "high-level radioactive waste" would NRC have jurisdiction under the Energy Reorganization Act. If NRC has jurisdiction as to a facility, it believes that it can properly consider the presence of all "radioactive material" at the facility in determining whether or not a license should be issued. The references to "waste radioactive material" appear in existing regulations and are not in conflict with the new rules; it was not felt to be necessary to change those references, which have no bearing upon the procedures for licensing under Part 60.

Comment No. 100: Westinghouse Electric Co. (5)

The definition of high-level waste in 60.2(i) should be revised so that irradiated reactor fuel is not included in material emplaced "with no intent to retrieve for resource values" (60.2(e)).

Staff Response to Comment 100:

See response to Comment No. 97.

Comment No. 101: U.S. Department of Energy (11)

10 CFR 60.2(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.

Staff Response to Comment No. 101:

See response to Comment No. 97.

Comment No. 102: Exxon Nuclear Company, Inc. (16)

60.2(i)

We recommend that the definition of HLW be made consistent with IRG's definition which says (in part): "HLW are either intact fuel assemblies that are being discarded after having served their useful life in a nuclear reactor...." The concept of "discard" is missing in NRC's definition.

Staff Response to Comment No. 102:

See response to Comment No. 97.

Comment No. 103: Shaw, Pittman, Potts and Trowbridge (14)

§60.2(i): Spent fuel should be characterized as "high-level radioactive waste" only where the determination has been made to permanently dispose of the specific spent fuel assemblies. This will avoid disputes as to "whether spent fuel is "radioactive waste" under circumstances where permanent disposal is not intended.

Staff Response to Comment No. 103:

See response to Comment No. 97.

ON THE DEFINITION OF THE TERM "HLW FACILITY"

Comment No. 104: Sierra Club (9)

The strictness of the "important to safety" standard applicable to structures, systems and components should be increased significantly. (Section 60.2(j), at 70416).

Staff Response to Comment No. 104:

The "important to safety" standard parallels the language contained in Part 50, Appendix A. Its primary purpose is to provide a basis for determining the sufficiency of information submitted in a license application. We believe it is appropriate for this purpose and we do not understand the basis for the commenter's suggestion to the contrary.

ONE COMMENTER PROPOSED A NEW DEFINITION FOR THE TERM "SITE".

Comment No. 105: U.S. Department of Energy (11)

(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?

Staff Response to Comment No. 105:

A definition of the term "site" will be set forth in the technical criteria.

ON THE DEFINITION OF THE TERM "SITE CHARACTERIZATION"

Comment No. 106: Southwest Research and Information Center (4)

Regarding site characterization, our detailed experience with the proposed WIPP site in New Mexico is that site characterization has not been properly defined in §60.2(n). Specifically, there has apparently not been adequate consideration of problems below the repository level or in the regional geology which are the basic problems (in addition to the mineral resource conflict) at the proposed WIPP site. It is not clear that the definition of site characterization or the site characterization report must deal with these or similar issues. Obviously, if there are such problems with a site, the time, expense and work of in situ testing should be avoided. Thus, we would suggest that in §60.2(n) and in §60.11(a) specific mention of regional geologic conditions be required. Furthermore, it seems to us that in §60.11(f) that an environmental impact statement should be prepared, rather than leaving it to the discretion of the Department, as in the proposed rule.

Staff Response to Comment 106:

The site characterization report is to describe those geologic features that bear significantly on the suitability of the geologic repository for disposal of radioactive waste. The technical criteria will identify resource conflict as one of the features that may affect a site's suitability. To the extent additional information is needed, the existing definition of "site characterization" would call for its development. On the NEPA issue, see response to Comment No. 73.

Comment No. 107: Westinghouse Electric Co. (10)

In addition, the footnote in 51.40(d) and the definition of required site characterization, 60.2(n), call for a large number of exploratory shafts and testing at depth. These policy proposals appear to exceed both technical and NEPA requirements, and they should not be included in NRC regulations.

Staff Response to Comment No. 107:

Nowhere in the proposed rule does the NRC call for "a large number of exploratory shafts" or require "testing at depth." The NRC anticipates borehole drilling as part of site exploration but notes that if site characterization is not carefully done, it may render a site unsuitable. Ultimately, the Department must decide whether or not to initiate in situ testing at depth for a particular site or sites.

Comment No. 108: State of Wisconsin, Department of Administration (31)

Our support for the third point, the expanded definition of allowable site characterization activities, is qualified by our recommendation that public hearings must be held in the vicinity of the proposed site(s) prior to approval of the site characterization report. Moreover, our support for the expanded definition of allowable site characterization activities assumes that these activities will be carried out in full accord with the provisions of the Wisconsin Environmental Protection Act.

Staff Response to Comment No. 108:

Public hearings could be held by NRC during its review of site characterization reports. The extent to which DOE has obtained public and State views during selection--a topic to be covered in the site characterization report--would be considered in determining how such further public involvement should be developed. The extent to which DOE activities conform to State laws is a matter to be resolved between DOE and the States concerned.

Comment No. 109: U.S. Department of Energy (11)

10 CFR 60.2(a)

(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 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.

Comment No. 110: The Analytic Sciences Corporation (28)

The definition of site characterization (item n, 44 F.R. 70416) specifically excludes data acquisition and analysis activities that precede site characterization. Indeed, the proposed rules and accompanying discussion are virtually silent on data acquisition and analysis during the reconnaissance phase. Consistency in the conservative approach inherently requires, however, that a high degree of confidence in the suitability of proposed sites be attained as a result of this effort. We submit, therefore, that the rules should give much more attention to this phase of the effort. Doing so may force revisions to succeeding procedures or validate the proposed procedures.

Staff Response to Comment Nos. 109 and 110:

The NRC thinks the differentiation is stated as precisely as is appropriate. The particular activities that will be needed prior to characterization will depend on a variety of factors peculiar to the geologic medium and site. The comments do not identify any particular deficiency nor suggest any improved language or approach for our consideration.

Comment No. 111: Southwest Research and Information Center (4)

Site characterization should be defined to include preliminary borings and geophysical testing, rather than those features included in the proposed definition in §60.2(n), which are more correctly identified as "site development." We feel that this change in definition is justified for three reasons. (1) the scale of in situ testing apparently being contemplated could clearly disqualify a site if improperly done, as the proposed rule recognizes. Such in situ testing is a much different level of work than preliminary site characterization work that does not require NRC approval. Such in situ testing should be done only if there is a high probability that such work will be the first stage in actual mine construction--i.e., that the actual shafts for the repository would be

the same (or just enlarged versions) of the development shaft(s). (2) "Site Development" work will actually cost many times more than the \$20 million estimate mentioned (44 Fed. Reg. 70410). This assertion is based on the WIPP experience where almost \$100 million has already been spent and no shafts have been constructed, as well as on the basis of uranium mining costs which indicate that one shaft alone would likely cost at least \$20 million. (3) There is strong legal precedent for seeing actual mining and development work as part of the actual site construction, thereby requiring an EIS. Such construction should require concurrence from NRC and the host state before proceeding. The rule, therefore, should recognize that in situ work, under whatever name, is very important and should be undertaken only after alternatives have been considered and stringent technical criteria have been met.

Staff Response to Comment 111:

The thrust of this comment is that:

- (1) preliminary borings and geophysical testing should be treated as "site characterization" and subject to the reviews specified in §60.11 and
- (2) other in situ testing should be treated as construction and subject to the reviews required under §60.31.

As to the first point, the staff believes that the specified activities are unlikely to have such significance to health and safety as to warrant NRC's prior review. On the contrary, the staff is concerned that undue NRC involvement at that stage might inhibit the DOE's screening activities and result in a less comprehensive effort to identify suitable sites.

The second point was discussed at length in the statement of considerations, 44 FR at 70410, and we adhere to the views that were expressed there.

Also, see responses to comments 58 and 79.

TWO COMMENTERS ADDRESSED THE LICENSING REQUIREMENTS

Comment No. 112: U.S. Department of Energy (11)

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.

Staff Response to Comment No. 112:

The staff agrees that the rule should be revised in accordance with the principles stated by the commenter. The NRC's responsibility is to assure radiological health and safety at a facility for storage or disposal of high-level waste; the procedural requirements established with respect to activities before receipt of such waste onsite are designed to assure that that waste when received, will be handled, stored, and disposed of in a manner warranting issuance of a license.

Certain activities of the Department, even though they involve the possession of nuclear materials, do not themselves give rise to the potential consequences for which the Part 60 licensing requirements have been developed. The Department has suggested that radiographic sources and radiation monitor test sources should not be subject to licensing. The NRC agrees with their suggestion insofar as it concerns the site characterization and construction stages; during operations,

however, the NRC believes that all onsite activities should be subject to licensing, so as to avoid fragmentation of responsibility and accountability with respect to radiological safety (particularly as it may affect occupational exposures). The NRC further recognizes that site characterization activities may in some cases involve in situ testing with relatively small quantities of readily-retrievable radioactive materials; it was not NRC's intention to prohibit such tests, although the original language might have been read to require that result.

The NRC has dealt with this issue by adding a new §60.7, which expressly recognizes that DOE (which is exempt from NRC licensing except as expressly required to be licensed) need not be licensed for such preliminary activities. This is not strictly an exemption under the exemption provisions of the Atomic Energy Act, but rather an interpretation of our jurisdiction under section 202 of the Energy Reorganization Act of 1974. In other words, the "facility" NRC is licensing is one at which high-level radioactive wastes are actually stored. To the extent that our procedures call for earlier NRC involvement, that involvement would be undertaken with a view to long-term health and safety considerations; but during site characterization and construction, there would be no "facility" for storage of high-level waste and no basis for the exercise of licensing authority over the incidental use of source, special nuclear, and byproduct material by the Department.

The amendment does not address the AFR storage facility question. Should the issue arise in practice, the Commission would consider granting an exemption so as to permit licensing to be carried out under other parts of NRC regulations.

Comment No. 113: Westinghouse Electric Co. (5)

The proposed procedures tend towards increasing bureaucracy and taxpayer expense rather than toward assurance of public health and safety. For example, 10CFR 60.3(b) and 10CFR60.11(g) state that NRC may deny DOE a license for a given site if certain NRC administrative procedures are not followed. The granting or denial of a license should be determined solely on a balance of factors affecting the public interest, and not regarded as an inter-agency punitive remedy.

Staff Response to Comment No. 113:

As the text of paragraph 60.11(g) indicates, it is the "adverse impact upon site safety" and not merely the failure to follow the site characterization procedures that may result in denial of a license application. With regard to §60.3(b), however, the staff believes the formal review prior to construction is so crucial - particularly in assuring that project commitments have not created momentum in favor of licensing - that the "grounds for denial of a license" language is appropriate. This conforms to provisions elsewhere in NRC regulations. (See §70.23 of 10 CFR Part 70.)

THE FOLLOWING COMMENTERS ADDRESSED PROVISIONS OF SITE CHARACTERIZATION REPORT

Comment No. 114: U.S. Department of Energy (11)

DOE agrees with and supports the concept of early informal interaction with the NRC staff and 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.

Staff Response to Comment No. 114:

the staff believes that the informal NRC review process provides an important means for conveying advice to the Department. The NRC has stated its expectation that DOE will structure its activities so as to enable it to take the NRC views into account in a timely manner. Nevertheless, by specifying certain acts that "should" be performed by DOE, we leave open the possibility that DOE will proceed without fully complying with the process NRC has set out. Of course, if the site characterization activities were to have an adverse impact upon site safety, the failure to observe the procedures could, as stated in paragraph 60.11(g), result in denial of a subsequent license application.

Comment No. 115: U.S. Department of Energy (11)

10 CFR 60.11 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.

Staff Response to Comment No. 115: The staff does not believe that paragraphs 60.11(a)(4) and (6) are redundant. Paragraph (a)(4) refers to the method employed to select a site, i.e., the order, weighting, and scope of factors considered and the way in which they were considered, e.g., the use of overlay



maps that block out areas with features to be avoided is a method. Paragraph (a)(6) refers to the decisionmaking process--essentially a history of the site selection and site elimination process followed to arrive at a particular site(s).

Comment No. 116: The Analytic Sciences Corporation (28)

We endorse the concepts and intent associated with the Site Characterization Report. We suggest, however, in view of its proposed function and content, that it would more appropriately be termed a "Site Identification Report."

Staff Response to Comment No. 116:

The term "site characterization" is preferred over "site identification" because the process of site characterization seeks to describe particular features and the quality of the candidate site. This objective is more correctly defined by the term "characterization" than by "identification."

Comment No. 117: Charles Fairhurst (1)

§60.11, p. 70416, "extent of planned excavations" should include a preliminary design of the repository. Knowledge of the proposed design would help indicate how the in situ testing program related to the repository lay-out, the susceptibility of the design to modifications in the event that the site characteristics were found to differ from expectations, and the opportunities for provision of additional engineered barriers.

Staff Response to Comment No. 117:

Paragraph 60.11(a) has been revised to explicitly call for DOE to include a conceptual design of a repository for the site to be characterized in its site characterization report. The level of detail would be commensurate with the purpose of site characterization as stated in the proposed rule. Such a provision would require DOE to supply enough design detail to allow the NRC staff to be assured that DOE's site characterization program would address the question of

whether a repository can be designed and built at the site in a way that would not compromise the site's ability to host a repository.

Comment No. 118: James G. McCray (8)

The Site Characterization Report should be made to NRC on a site by site basis. This report should be restricted to justification for beginning site characterization at a particular site and not involve comparisons with other candidate sites.

The Site Characterization Report should not involve the Department's program for further development of alternatives.

Staff Response to Comment No. 118:

The beginning of site characterization at a particular site is not dependent on the submission of site characterization reports from other sites. However, by the time a license application is submitted by DOE, the alternative sites must be characterized. It is entirely appropriate to ask DOE what it is doing to assure that these alternatives will be available for consideration at the time an application is submitted. If DOE is unable to summarize its program adequately, the Director may wish to make "specific recommendations" as specified in §60.11(e) so as to enable the Commission to satisfy the requirements of NEPA.

Comment No. 119: Shaw, Pittman, Potts and Trowbridge (14)

Proposed §60.11 would require DOE to submit a site characterization report "[a]s early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization...." Since activities which NRC might consider "site characterization" have already been carried out at some potential repository sites (such as Carlsbad, New Mexico) and may be carried out at others before the proposed regulations are adopted. The proposed regulation should reflect this fact.

The proposed scope of the site characterization report could also be usefully narrowed in some areas without compromising its purpose. For instance, section 60.11(a) calls for the report to include the identification and location of alternative media and sites on which DOE intends to conduct site characterization for which DOE anticipate submitting subsequent site characterization reports. This would seem to unnecessarily delay DOE from submitting a site

characterization report for one site until it had identified all other alternate sites which it wanted to characterize. The process could lead to a "convoy" system where the slowest paced site governs the timing for every other site. This is of particular concern in the context of the proposed regulations because of their prohibition on the conduct of site characterization activities prior to Staff review. It is not clear why information on alternative sites is relevant at the site characterization stage. Research and development on waste forms, another item required to be included in the site characterization report, would also seem to be of relatively minor relevance at the site characterization stage.

Staff Response to Comment No. 119:

Under Section 14 of P.L. 95-601, DOE is required to give notice as early as possible after the commencement of planning for a particular proposed facility. In NRC's view, this notice should be given prior to site characterization. Accordingly, NRC has not changed the language because it merely reflects existing law on the question of when notice to the Commission is required. The response to Comment 118 addresses the inclusion of alternative sites in the site characterization report. It is not NRC's intention that this provision in any way delay DOE from submitting a report with respect to a particular site.

Because the technical criteria applicable to waste form and engineered barriers are likely to be stringent, waste form investigations should, it is true, be of relatively minor relevance at the site characterization stage. Nevertheless, information regarding DOE's program will help to facilitate NRC and public understanding of the activities that would be carried out at the site if it were to be chosen for use as a repository and, in particular, it should facilitate early examination of possible waste form host rock interactions.

Comment No. 120: Mississippi Department of Natural Resources (15)

There are presently several site characterization decisions in progress by DOE, including three sites in Mississippi. The site characterization reports under the pre-application review should apply in retrospect to these efforts.

Staff Response to Comment No. 120:

DOE has not given NRC notice of commencement of planning for any particular proposed facility in Mississippi which, as NRC reads P.L. 95-601, it would be required to do prior to site characterization.

Comment No. 121: Mississippi Department of Natural Resources (15)

The site characterization report does not address directly the problems of site-related impacts, such as transportation, economic and social, on the local and state infrastructure and population. This should be specifically addressed in any site characterization report.

Staff Response to Comment No. 121:

The NRC agrees that some consideration of these matters should be included in the site characterization report and as the regulations call for a detailed discussion of the decision process that led to the site, the NRC expects that these matters will be referred to. A Standard Format and Content guide for preparation of site characterization reports will explicitly request such information. However, the level of detail need not be very great. At this stage, NRC should be able to comment in an informal way on the question whether NEPA considerations are likely to be so significant that the site in question would not appear to be a reasonable alternative. This would be the case most particularly if, as the NRC anticipates, a site characterization report is accompanied by a draft environmental impact statement. Our principal concerns in the site characterization review relate to safety issues and, especially, to the details of the site characterization program itself. Of course, in any licensing proceeding, the concerns identified in the comment would be reviewed in depth as required under NEPA.

Comment No. 122: Sierra Club (9)

Section 60.11 should require formal public hearings prior to site characterization. The value of these hearings is touched upon in the "Site Characterization and Authorization of Construction" discussion (at 70410-11) and the "Site Characterization Review" discussion (at 70409). The reasons given for rejecting these hearings are not sufficiently strong to outweigh the hearings' merits. We find it difficult to comprehend the Commission's reasoning that "any decision on alternative sites issues at this early point is likely to require reexamination at the construction authorization proceedings and, therefore, would be of questionable value," given that the Proposed Rule does not require the characterization of alternate sites. (at 70410) Moreover, the Commission's finding that the hearing process "can be an inefficient and cumbersome means of arriving at decisions" (at 70410) should be outweighed by the importance of the issues and the Commission's own recognition that "it would be possible for the Commission to structure its proceedings so as to provide for formal hearings on limited issues at an early stage in the process," and that "[t]he hearing process has clear advantages as a mechanism for fact finding." (at 70410)

Staff Response to Comment No. 122:

The benefits and drawbacks associated with formal hearings prior to site characterization were, as noted, discussed by the Commission when it published the proposed rule. The commenter does not disagree with the relevance of the considerations identified by the Commission, but it would balance these considerations differently. This is a matter of judgment, and the staff continues to believe that the conclusion reached by the Commission is in the public interest. This is based, in part, upon our view that under NEPA it will be necessary for DOE to characterize a minimum of three sites representing a minimum of two geologic media and upon DOE's stated intention to undertake characterization of multiple sites.

Comment No. 123: Environmental Policy Institute (3)

The "Other Reviews" referred to in the Notice (44 F.R. 70412) concerning site screening and waste form should be formalized. They are not merely programmatic decisions by the DOE but represent critical elements of a waste repository and certainly basic elements of a defense-in-depth approach. The Site Characterization Report preparation should not be defined as an "informal conference between the prospective applicant and the staff" (Sec. 60.11). We cannot agree with the Commission's unqualified assurances that the opportunities for public participation and staff review provide an acceptable process for review

of DOE's site characterization program. NRC's argument that multiple site characterizations would nullify the value of a hearing process is irrelevant given the lack of requirements that such characterizations will in fact occur. We request that the NRC propose procedures under 10 CFR Part 2, Subpart F for review of the DOE site characterization report.

Staff Response to Comment No. 123:

NRC's statutory authority includes "licensing and related regulatory authority" as to certain DOE facilities. While its powers are undoubtedly extensive, NRC does not believe that they contemplate that NRC should participate in any formal sense in the review of DOE's research or development programs; NRC's jurisdiction arises when there is a "facility" to consider, i.e., when it is proposed that a particular site be characterized. NRC believes it is important to follow the unfolding of DOE's program closely, as stated in the discussion on other reviews, but we would not be warranted in formalizing a review process with respect to that program. With respect to hearings prior to site characterization, see the response to Comment No. 122.

ONE COMMENTER PROPOSED INCREASING THE MINIMUM TIME PERIOD FOR PUBLIC COMMENT ON THE DRAFT SITE CHARACTERIZATION ANALYSIS

Comment No. 124: Sierra Club (9)

The minimum period for public comments on the draft site characterization analysis should be increased from 60 days to 90 days. (section 60.11(e), at 70416)

Staff Response to Comment No. 124:

The period for public comment on the draft site characterization analysis has been increased from a minimum of 60 days to a minimum of 90 days, as suggested. The NRC recognizes the importance of public participation and believes that this time extension will permit more detailed public comment on the analysis to be solicited. The entire review process under §60.11 also includes time for NRC's preparation of the draft and final site characterization analyses;

in the context of this process as a whole, the additional 30 days for public comment should have little impact upon DOE.

TWO COMMENTERS SUGGESTED SPECIFYING A MAXIMUM TIME PERIOD FOR PUBLIC COMMENT ON THE DRAFT SITE CHARACTERIZATION ANALYSIS

Comment No. 125: Westinghouse Electric Company (5)

60.11(e) should be revised to specify time limits for NRC's review.

Comment No. 126: Shaw, Pittman, Potts and Trowbridge (14)

Two minor comments on site characterization are also appropriate. First, a maximum time period (perhaps 90 days) should be provided for comments on the draft site characterization analysis, in addition to the minimum comment period of 60 days specified in §60.11(e). Second, §60.11(f) should provide that any objections by the Staff on the site characterization report do not affect the authority of the Commission, Appeal Boards, Licensing Boards, etc. This would provide the necessary symmetry to the provision in §60.11(f) that a "no objection" finding does not affect the authority of the Commission.

Staff Response to Comment Nos. 125 and 126:

The NRC recognizes that DOE has a practical need to be able to estimate the duration of the review process. NRC understands, further, that undue delays can result in inefficient use of public funds. Nevertheless, NRC believes it would be a mistake to establish rigid constraints, either on public comment or NRC staff review, that could stand in the way of an adequate review. The staff has concurred with the suggestion that the minimum period of public comment be extended to 90 days; this should not be construed, however, to mean that ordinarily the actual comment period would be longer than 90 days. Whether a longer period should be allowed would depend upon many factors, including the complexity of issues identified in the draft analysis and opportunities in advance of the draft analysis' publication for members of the public to become aware of the issues.

The suggestion regarding paragraph 60.11(f) is consistent with the intent of the proposed language. The paragraph has been changed to make the point explicit.

THE FOLLOWING COMMENTS ADDRESSED CONSTRUCTION AUTHORIZATION

Comment No. 127: Shaw, Pittman, Potts and Trowbridge (14)

Proposed Section 60.21 describes the information to be included in the application for construction authorization. In general, the regulations do not explicitly reflect the preliminary nature of some of the information which will be available. In some cases, the information requested seems to be overly detailed for a pre-construction stage.

Staff Response to Comment No. 127:

Section 60.21 must be read in conjunction with paragraph 60.24(a), which specifies that the application "shall be as complete as possible in the light of information that is reasonably available at the time of submission." Further, §60.24(b) specifically lists several categories of information which, where appropriate, may be left for consideration only at the stage of license issuance.

Comment No. 128: Shaw, Pittman, Potts and Trowbridge (14)

§60.21(a): The proposed regulation should allow DOE to submit a site specific environmental impact statement, if one has been prepared, in place of the environmental report now called for. (This comment would of course not apply if the more fundamental NEPA-related changes discussed above are made).

Staff Response to Comment No. 128:

So long as DOE's submission conforms to the requirements with respect to an environmental report, NRC would not object to DOE's use of an environmental impact statement for this purpose. NRC nevertheless must comply with NEPA and cannot be bound to accept judgments arrived at by DOE in any EIS which it has presented to us.



Comment No. 129: Lowenstein, Newman, Reis, Axelrad and Toll (2)

(Proposed §60.21(b)). Thus, it appears that prior to the issuance of a construction authorization "final" information must be submitted even with respect to such subjects as design of the facility, the quality assurance program for operations, plans for coping with emergencies, plans for decommissioning, etc.

Staff Response to Comment 129:

These and other topics must be addressed to the extent that information is "reasonably available." §60.24. The NRC recognizes that if detailed information on some issue is not material to the making of construction authorization findings, it may not be reasonably available. Conversely, if the issue is one that is important at the construction authorization stage, the "reasonably available" standard is intended to require DOE to develop and provide information in detail.

Comment No. 130: U.S. Department of Energy (11)

10 CFR 60,21(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.

Staff Response to Comment No. 130:

Section 60.21(b)(3) relates exclusively to protection of common defense and security. At facilities licensed under 10 CFR Part 60, it is those activities that are entirely or significantly carried out on the surface that can result in injury to common defense and security interests. "Comparable surface facilities" therefore refers to other facilities at which DOE handles materials similar

(in terms of common defense and security considerations) to those that will be received and possessed at a geologic repository operations area. We regard the proposed language as appropriate.

Comment No. 131: U.S. Department of Energy (27)

FR page 70417

§60.21(b)

new (4) "A certification that the Department has exclusive jurisdiction over the lands designated in the application and that the Department holds such land in fee simple without encumbrances"

Staff Response to Comment No. 131:

Requirements concerning DOE's interests in real property will be included in the technical criteria. Under 60.21(c)(8), DOE will be required to describe such interests. The matter accordingly has been addressed and the suggestion has therefore not been adopted.

Comment No. 132: Shaw, Pittman, Potts and Trowbridge (14)

Some of the requested categories of information in §60.21 would not seem necessary, at least in full detail, at the construction authorization stage. These include emergency plans, §60.21(c)(9), nuclear material accounting and control, §60.21(c)(10), retrieval plans and alternate storage, §60.21(c)(11), organization, §60.14(c)(i), and decommissioning, §60.21(c)(14)(vii). We would also recommend that the findings to be made by the NRC in issuing a construction authorization, described in §60.31, be tailored to the preliminary nature of information in these areas.

Staff Response to Comment No. 132:

See response to Comment No. 139. Additionally, it is NRC's view that §60.31 (particularly, the "reasonable assurance" qualification) does properly take into account the preliminary nature of some information.

Comment No. 133: Sierra Club (9)

The Proposed Rule should expressly require the Department of Energy to characterize fully several sites in a variety of different geologic media as

a prerequisite to applying for a license under Section 60.21. The Federal Register discussion preceding the Proposed Rule stresses repeatedly the value of characterizing several potentially acceptable sites in a variety of geologic media. Moreover, it is assumed that DOE will conduct such a program. (See "Departure From the General Statement of Policy" at 70409, "Site Characterization Review) at 70409, "Provision for characterizing Several Sites" at 70409-10, and "Procedures" at 70411.) This requirement was also stressed in President Carter's February 12, 1980 Policy Statement. Yet neither Section 60.21 nor any other section multiple-site characterizations requires prior to DOE's application for a license.

Staff Response to Comment No. 133:

See response to Comment No. 32.

Comment No. 134: Charles Fairhurst (1)

§60.21, p. 70417, (c)(1) ". . . The assessment shall contain an analysis of the geology, hydrology. . .etc." Presumably "meteorology" as used here relates to the possibility of meteorite impact at the site, rather than study of general weather conditions. It would seem advisable to include also "tectonic and volcanic history" (unless these seem advisable to include also "tectonic and volcanic history" (unless these are understood within the term "geology"). The same grouping of "geology, hydrology and meteorology" is used in other parts of the regulations.

(c)(3)"A description and analysis of the design and performance requirements. . . (iii) the effectiveness of engineered and natural barriers" should be defined to include the start of 'in-situ' demonstration of the effectiveness of proposed shaft-sealing and tunnel back-filling techniques. Such tests should be conducted for as long a period as possible, using in-situ test sections, prior to closure of the repository. In this way the efficacy of isolation of the filled repository from the biosphere can be given the fullest possible test, prior to the request for decommissioning (§60.51, (a)(4), p. 70420).

Staff Response to Comment No. 134:

The term "meteorology" includes global climatic changes. It is to be understood that the phrase "geology, hydrology and meteorology" include tectonic activity and volcanic activity.

The regulations deal adequately with the performance of the specified in situ tests. DOE will need to be "as complete as possible in the light of information that is reasonably available" at the time it submits an application to

amend its license to permit closure. §§60.24, 60.51. It will need to provide, in its license application, a detailed description of programs designed to resolve safety questions, paragraph 60.21(c)(13), which will be considered by the Commission in making the prescribed findings. These provisions contemplate that tests such as those described in the comment would be undertaken by DOE. Requirements with respect to such tests could be incorporated in the license, paragraph 60.42(a), or could be required under paragraph 60.72.

Comment No. 135: Lowenstein, Newman, Reis, Axelrad and Toll (2)

We can appreciate that the Commission would prefer to reach its judgments, even at the construction stage, on the basis of final and complete information. However, it should be recognized that until construction is authorized (including the approval of specific design criteria and design bases) refinement of design can be a wasteful and needless exercise, and that many aspects of design and operation can be more suitably determined during construction than prior thereto. We therefore suggest that the Commission modify § 60.21(b) to identify those items of technical information which can properly be submitted in preliminary form without effecting the Commission's ability to reach an appropriate decision on construction authorization.

Staff Response to Comment No. 135:

See response to Comment Nos. 127 and 129.

Comment No. 136: U. S. Department of Energy (11)

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 prejudge 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.

Staff Response to Comment No. 136:

The procedural rule does not require in situ testing at depth and therefore does not require an exploratory shaft as part of the site characterization

program. However, the NRC--reflecting the judgment of other experts as well-- continues to believe that in situ testing at depth provides an essential technique by which DOE can obtain the quality of geologic, hydrologic, and waste form/host rock information needed in arriving at the technical judgments reflected in the standards for construction authorization and in supporting the selection of DOE's preferred site from among the candidate sites. The NRC believes that it should express its views on this subject clearly at this time, instead of waiting for the site characterization report and the "resulting interactions," so that DOE can take them into account in the development of its program.

Comment No. 137: Sierra Club (9)

The purported "Environmental" finding (Section 60.31(c)) is not even an environmental finding. Rather, it is a balancing test which could allow a construction authorization for a repository with recognized catastrophic potential environmental effects. Indeed, this finding is so vague as to be of virtually no value to the Commission or other interested parties.

Staff Response to Comment 137:

The staff has revised the environmental finding to conform more precisely to terminology in parallel Commission regulations, e.g., 10 CFR 30.33(a)(5), 40.32(e), 70.23(a)(7). The making of this finding requires compliance with the provisions of the National Environmental Policy Act.

Comment No. 138: Sierra Club (9)

Section 50.32 should be strengthened by amending subsection (b) to read: "The Commission shall incorporate provisions requiring..." (at 70419)

Staff Response to Comment No. 138:

Upon further consideration, the staff has arrived at the view that reports of the types specified, at least periodically, should be required as a condition of a construction authorization. The language has been revised in accordance

with the suggestion. The detail required in the reports would be specified in such condition.

Comment No. 139: Shaw, Pittman, Potts and Trowbridge (14)

§§60.33(b) and 60.45(b): These provisions, dealing with amendments to construction authorizations and licenses, should incorporate the "significant hazards" language for pre-noticing now found in the analogous Part 50 provisions, §50.91.

Staff Response to Comment No. 139:

The suggested limitation was already applicable to license amendments in view of the proposed amendment to paragraph 2.105(a). It was clearly intended that the pre-noticing should also apply to significant amendments to construction authorizations even though such authorizations are not licenses. The NRC believes that inserting the concept directly into 10 CFR Part 60 will express its intention more clearly and therefore the proposed changes have been made.

Comment No. 140: Sierra Club (9)

Similarly, the standards for issuance of a license under Section 60.41 are entirely too weak. Among other things, the test in subsection (c) should be strengthened substantially.

Staff Response to Comment No. 140:

The technical criteria that will be used in applying the standard will be the subject of rulemaking, and the commenter will have an opportunity to evaluate the appropriateness of such criteria at that time. The standard itself, however, is based on the statutory provisions, set out in detail in the notice (44 FR 70415), that guide the Commission in the exercise of its powers.

Comment No. 141: Environmental Protection Agency (26)

We found that the requirements for the applicant's design criteria were somewhat confusing. In the Preapplication Review Section, Part 60.11(a), the requirements include the criteria used by the U. S. Department of Energy (DOE) to arrive at

the candidate areas and the sites(s) selected. However, in the License Applications Section, Part 60.21(c)2, and the Construction Authorization, Part 60.31(a), the requirements specify both DOE and NRC criteria, including subparts E and F, which we assume will become the Sections containing the NRC technical criteria. This raises such questions as: (a) What is being done to assure compatibility of the criteria? and (2) When will the various criteria be available? We believe that you should resolve such questions before embarking on major site exploration activities.

Staff Response to Comment No. 141:

As noted, the criteria referred to in paragraph 60.11(a) are those used by DOE, which has the responsibility to screen and select sites for characterization.

When DOE has characterized a site and proposes construction, then the Commission's authority to prescribe regulations governing facility design comes into play. These are the design criteria referred to in paragraphs 60.21(c)(2) and 60.31(a)(2). Design of a facility is of course a very complex activity and, from the point of the view of the builder, the best way to proceed may be to use design criteria that take into account a wide variety of considerations other than those that NRC develops for health and safety reasons. NRC should not inhibit DOE from selecting whatever design criteria it determines to be appropriate for purposes of developing its program; but, as provided, it is essential that DOE state the criteria it has used explicitly (paragraphs 60.21(c)(2) and 60.31(a)(1)) and explain the relationship of those criteria, as required by paragraph 60.21(c)(2), to the ones prescribed by NRC.

The compatibility of the DOE and NRC criteria will be determined in the licensing process, especially in arriving at the determination that the design complies with NRC's technical criteria. §60.31(a)(2).

The various criteria will be available from NRC as follows:

DOE criteria for screening and selecting sites for characterization: when a site characterization report is submitted.

NRC design criteria: as soon as technical criteria have been promulgated in accordance with statutory rulemaking procedures. NRC anticipates that this process will be completed by the end of 1981.

DOE design criteria: when DOE submits its license application.

The DOE criteria may, of course, be available at an earlier date from DOE.

#### THE FOLLOWING COMMENTERS ADDRESSED THE ISSUE OF STATE PARTICIPATION

##### Comment No. 142: Energy Resources Conservation and Development Commission

Support C -- Participation by State Governments -- does not meet what we see as the necessary criteria for state involvement in the siting, construction and decommissioning of a repository. Although the proposed regulations offer the state an opportunity to participate, and allow states to specify the scope of their concerns, the NRC is given the authority to make the ultimate decision on what issues states will and will not be able to review in a specific licensing proceeding, as well as the level of funding for review of approved state proposals. In addition, there is no process through which states can appeal an NRC decision on the scope of state involvement.

We realize that DOE bears a large portion of the responsibility for State participation and that NRC's proposal for State participation in the licensing process may be limited for that reason. What DOE proposes for State participation is unclear, however. It is therefore important for the licensing process to provide the basis for meaningful State review. Moreover, the comprehensive nature of the current proposal provides a framework for implementing necessary State participation processes.

The fundamental shortcoming of the current proposal is the lack of a mechanism for states, whether potential host states, or adjacent states, to halt the repository siting process when their concerns are not resolved. Interested states (i.e., states which have a generic interest or a policy concerned with nuclear waste) also have concerns which must be met through specific procedures: the scientific questions in repository development are the same for host, adjacent, and interested states. Section 60.62(b), which contains the undefined term "affected (states)," may eliminate input from interested states.



One mechanism for state involvement which has received a good deal of attention, most recently by the Interagency Review Group (IRG), is consultation and concurrence. While the Nuclear Fuel Cycle Committee of the Energy Commission is not tied to this specific terminology, we do support the concept which is embodied in the terminology. Consultation implies an absolute requirement for the federal government to meet, interact, and exchange information with states. Moreover, the idea of concurrence necessarily includes the possibility of nonconcurrence. The proposed licensing regulations appear to bypass entirely the latter concept.

The essential role of a potential host state under current scientific conditions and state-of-the-art should be to participate in the fundamental scientific verification program, even prior to a project being initiated within the state. This role means not only some form of consultative type interaction between the state and the federal government, but also that the state itself should be able to issue a series of concerns or scientific questions and have those questions resolved by its own experts by means of literatures searches and informational hearings.

Normally the potential host state role is defined as either having a veto or some form of "cooperative" interaction with the capability to stop the project. This essentially anticipates a subordinate role. In terms of development and in terms of verification prior to licensure, a potential host state should have a capability of interacting on the project and halting the project at any phase of its development if the state is not satisfied that the project is moving forward with a reasonable and predictive set of methodologies. Of course, a mechanism must also be specified for arbitrating cases on non-concurrence and for an ultimate federal override if arbitration fails.

Staff Response to Comment No. 142:

The issues identified in this comment have been the subject of extensive study and debate. The Commission's views were set out at length in NUREG-0539, which was cited in the preamble to the proposed rule. See 44 FR at 70412. The issue now under consideration is not the role of the States in the waste management program as a whole, but rather the role of the States in the NRC licensing process. The comment does not appear to us to call for any changes that can appropriately be made in this limited context. The only point that addresses the specifics of the proposed rule concerns the use of the term "affected" states in paragraph 60.62(b). The term is used in connection with defining the parties eligible for NRC financial assistance or other services. The NRC thinks it is

entirely reasonable that something more tangible than a general "interest" be identified as a condition for submitting a proposal under §60.62.

Comment No. 143: Department of Administration, State of Wisconsin (31)

Finally, the Committee appreciate the Commission's endorsement of full State participation in the licensing process. To this end, we are recommending specific changes to 10 CFR Part 60, which will allow more meaningful participation by the affected public and by State and local officials.

(NOTE: The recommended changes were omitted from the comment letter of the Department of Administration. They were later sent and docketed as PDR No. 32, and are provided below:)

[Addendum to P.D.R. Letter #31, submitted with P.D.R. Letter #32]

Suggested Amendments to NRC Proposed Licensing Procedures for HLW Repositories  
10 CFR Part 60

Subpart B - Licenses

Section 60.11 Site Characterization Report

- (a)(6) [Footnote at end of phrase] To satisfy this requirement, the Commission has established the following criteria regarding public notification by the Department:
- (1) Contacting the Governor or his designee;
  - (2) Coordinating with appropriate state and local agencies; and
  - (3) Holding public meetings in the vicinity of the proposed site(s) to explain the proposals and process to be employed by the Department.
- (b) [Insert at beginning of paragraph] Immediately upon receiving a site characterization report, the Director shall notify the Governor of the State in which the site to be characterized is located.
- (d) [Insert after first sentence] The Director shall transmit copies of the draft site characterization analysis to the Governor of the affected state and to the chief executive of the affected municipality or county.
- (e) [Insert after first sentence] During this period, a public hearing shall be held in the county seat of the county in which the site to be characterized is located.

Section 60.22 Filing and Distribution of Application

- (d) [Insert at end of paragraph] Copies of the application, environmental report, and other amendments shall also be filed with the officials designated by the Governor of the affected State.

Section 60.23 Elimination of Repetition

[Strike last section of paragraph and replace with the following]

Provided, That such references are clear and specific and that copies of the information so incorporated are reasonably available to each recipient of the application, environmental report, or site characterization study.

Subpart C - Participation by State Governments

Section 60.62 Filing of Proposals for State Participation

- (e) [Insert after paragraph (d)] If a State desires to have its representatives accompany NRC personnel on site visits, under Section 60.11(g), the designated contact agency and person(s) shall be specified in the proposal.

Staff Response to Comment No. 143: The staff does not believe it would be appropriate to specify requirements for public notification by DOE in §60.11(a)(6), since the DOE would not as yet be an NRC licensee.

Provisions for the notification of the Governor of the State in which the site to be characterized is located by the Director, upon receipt of the site characterization report are set forth in §60.11(c).

In response to the Department of Administration's comment on §60.11(d), changes have been made in the rule to provide copies of the Director's site characterization analysis to the Governor and legislature of the State and to the chief executive of the municipality, county or tribal organization.

See staff response to Comment Nos. 108 and 122 for a discussion of public hearings prior to site characterization.

Procedures governing the filing and distribution of a license application and any environmental report required in connection therewith are set forth in §2.101.

With respect to the comment on §60.23, the staff believes that the present wording of the rule assures the availability of the information to all interested parties.

If a State wishes to have representatives accompany NRC on site visits, it may include such provisions within its proposal for State participation. The staff does not believe that it is necessary to specify this option in the rule.

Comment No. 144: Mississippi Department of Natural Resources (15)

The proposed rules also set forth provisions for consultation and participation in the license review by State Government. With reference to the State participation, it is stated, "the Commission has undertaken a thorough review of the matter and now proposes a more extensive informal involvement during early phases of site characterization and a deferral of formal proceedings until site characterization has been completed." The term informal involvement appears to be somewhat out-of-step with previously stated ideas that target States would be actively involved by being assured of having the opportunity to engage in the decision making process. This idea is even stated in these proposed rules under the Site Characterization Review section. We object to the term informal involvement, especially, if the Federal government (including the President) is sincere in its many statements relative to the States' role of "consulting partners" to the Federal government in matters concerning nuclear waste repositories.

We fully agree with the concept of the Nuclear Regulatory Commission, as well as the States, having the opportunity to consult in and review the site characterization studies to help insure adequate data and safeguards are obtained before a site is finally selected.

Staff Response to Comment No. 144:

The commenter's concern is addressed to the use of the phrase "informal involvement;" the extent of that involvement, as actually described in §60.11, is supported by the commenter. The staff thinks that the discussion makes it clear that the preapplication review is intended to be "informal" only in the sense that

it is not an adjudicatory proceeding subject to the procedures typically associated with hearings on the record. The involvement of the States would nevertheless be active, with assurances (as specified in §60.11) that they will have timely opportunities to express their views and have them considered by NRC as it develops its positions.

Comment No. 145: Mississippi Department of Natural Resources (15)

The general tone of the Subpart C--Participation by State Governments--gives the impression that state and local governments are that of observers and occasional participants provided they generate enough activity.

Staff Response to Comment No. 145:

Subpart C ensures that the States and local governments have an opportunity to make significant contributions to the license review. It is not NRC's intention that they merely be "observers and participants provided they generate enough activity."

Comment No. 146: Mississippi Department of Natural Resources (15)

The contents of license applications require plans for coping with radiological emergencies. These types of plans place a considerable amount of responsibility for planning on the State and local governments. The extent and scope of the plans should be defined as in those regulations required for nuclear commercial power reactors.

Staff Response to Comment No. 146:

The extent to which particular requirements should be included in emergency plans will be dealt with in the technical criteria.

Comment No. 147: Mississippi Department of Natural Resources (15)

The consultation process should give the State a stronger, more formalized role in the activities of site characterization, particularly those that relate to site specific data as opposed to generic data. The concurrence part of the consultation and concurrence process would then be addressed by any State and/or federal laws in place. The consultation definition and process should be made

clearer to the extent that the State has the procedure available to recommend specific courses of action whereupon the Director of the NRC's Office of Nuclear Materials Safety and Safeguards would respond in writing as to why a particular recommendation was not taken, if so. This would define the State participation program in a formal sense. This, of course, would then modify the approval of proposals process (Section 60.83).

Staff Response to Comment No. 147:

The proposed rule already states that the Director's final site characterization analysis "shall take into account comments received," from the States and other persons, during the comment period. Paragraph 60.11(e). Further, comments received from States in accordance with paragraph 60.61 "shall be considered by the Director" in formulating his views under §60.11(h). Further, the Director is required to "respond to written questions or comments from the States, as appropriate, on the information submitted by the Department in accordance with §60.11." Paragraph 60.61(c). NRC believes these provisions are fully responsive to the concerns identified by the comment.

Comment No. 148: Southwest Research and Information Center (4)

Consultation and concurrence with the State should be required in §60.11(b), rather than merely a notification that State or local governments may be requested, as in the proposed rule. State participation and approval in all significant decision points of repository development is essential for any kind of public confidence in the licensing process. Thus, in §60.61 NRC staff must be readily available to the States to provide technical assistance and information.

Staff Response to Comment No. 148:

See response to Comment No. 147. Additionally, NRC believes that appropriate provisions regarding the furnishing of technical assistance and information have been included in the proposed rule. See §§60.62 and 60.63.

Comment No. 149: Natural Resources Defense Council (12)

The proposed regulations in two key respects restrict the opportunity for States to participate in the NRC's review of its characterization reports and license applications. First, a State's participation is subject to the "availability of funds" and "approval" by the Director of the Office of Nuclear Material Safety and Safeguards. (Paragraph 60.83). Second, such participation is limited to "affected states." (Paragraph 60.62(b)). NRDC believes that neither restriction is appropriate or necessary. Indeed, these restrictions are likely to impede careful technical review of DOE's plans, and they are likely to erode further the already strained state-federal relationship. The NRC, instead of conditioning or restricting its assistance, should provide all interested, affected or host states with the assistance they need to participate effectively in the NRC's review of DOE's site characterization reports and license applications. Additionally, NRC should offer the same assistance to Indian Nations.

Staff Response to Comment No. 149:

To avoid potential misunderstandings at a future date, the staff thinks that it is essential to indicate that the level of NRC assistance will necessarily depend on budgetary considerations and the Commission's assessment of priorities at the time. "Subject to the availability of funds" may not be the best choice of words to express this concept but no better formulation comes to mind. With respect to "affected States," see the response to Comment No. 142. Provision has been made for assistance to Indian tribes.

Comment No. 150: League of Women Voters (6)

The regulations state that after the Department of Energy has published a notice of the availability of the draft site characterization analysis in the Federal Register, "a reasonable period, not less than 60 days, shall be allowed for comment on the draft site characterization analysis." [60.11(e)] The regulations also say that states potentially affected by DOE's analysis may submit to the Director (NRC) a proposal for state participation in the review of the site characterization report and/or license application. [60.62(b)] But what is not clear is how much time a state will have to prepare a proposal (including obtaining citizen comments), apply to NRC for funding of that proposal, and complete its program. Assuming that the state participation program takes a year or longer to complete (which is very likely), it would seem that the general public should have the same length of time concurrently to comment on the characterization plan. Thus, the regulations should clarify how the time frame for state participation in DOE's site analysis will relate to the time frame for general public review and comment.

Staff Response to Comment No. 150:

The proposed rule, the staff agrees, is indefinite with respect to the schedule for submission and consideration of proposals for State participation. This was deliberate, however, because NRC does not wish unduly to restrict the States' flexibility in determining when, and how, to develop proposals. On the other hand, the more quickly a State does prepare and submit a proposal, the more likely it will be that effective State participation can be arranged under §60.63. To the extent practicable, State activities approved under that section will contribute to the review of site characterization reports.

NRC would advise States, particularly under paragraph 60.62(a), that if they wish to participate actively in review of a site characterization report, they should limit their initial proposals to that specific objective.

There is no necessary connection between the State's activities under §60.63 and the development and publication of site characterization analyses although, as stated above, States will be encouraged to take advantage of §60.63 so as to increase their ability to contribute to the review of the site characterization report.

Comment No. 151: League of Women Voters (6)

While the proposed rule states that "proposals for participation and review shall be signed by the Governor of the State submitting the proposal..." the regulations do not specify that the Governor's office will coordinate the preparation of the proposal. [60.62(c)] Thus, under the proposed rule, citizens would be at a loss to know whom in their state to approach with recommendations for this proposal. The regulations should require the governors of affected states to appoint a lead agency, office or committee to serve as a liaison with NRC staff and citizens on the site characterization plans and license application.



Staff Response to Comment No. 151:

NRC thinks this kind of administrative decision is best left to the individual States. To illustrate: if MRC were to specify that the Governor should appoint a liaison, it might be intruding upon the prerogatives of the Legislature to develop some other structure.

Comment No. 152: Southwest Research and Information Center (4)

Regarding public participation, it should not be left exclusively to the states, which is what the proposed rule seems to imply in §60.62(c)(4). NRC should have public participation through hearings, NRC should consider funding such participation, at least under a reimbursement method similar to that used in the Public Utility Regulatory Policy Act (PURPA). Furthermore, NRC's rule should require that DOE fund and be responsive to public concerns and input.

Staff Response to Comment No. 152:

The proposed rule provides for public participation throughout the NRC review process. See paragraph 60.11(d) (site characterization analysis) and the relevant provisions of 10 CFR Part 2 (Rules of Practice, esp. §§2.714 and 2.715) and 10 CFR Part 51 (review of draft environmental impact statements). The purpose of paragraph 60.62(c)(4) is to facilitate, to the extent permitted by law, the active participation of local governments and citizens in the NRC review. The issue of funding intervenors involves policy considerations beyond the scope of the present rulemaking.

TWO COMMENTERS ADDRESSED THE TERMINATION OF A LICENSE FOLLOWING DECOMMISSIONING

Comment No. 153: Sierra Club (9)

Section 60.52, which provides for the termination of a license following the decommissioning of the site, should be eliminated from the Proposed Rule. The issue of license termination is a major policy question requiring further study prior to adoption. Such a provision can always be added to the Commission's Rules at a future date.

Staff Response to Comment No. 153:

NRC agrees that the issue of license termination is a major policy question. Further, NRC has no doubt that there will be considerable debate regarding license termination over the decades between adoption of rules and implementation of the provision. NRC could have omitted the topic altogether, as is suggested. But it seems to us that some recognition of the issue is desirable so that the rule covers the entire process. Note that there is no assurance under the proposed language that the license could be terminated since a decision to do so could only be made if "authorized by law."

Comment No. 154: State of Connecticut, Department of Environmental Protection (17)

I do not believe, however, that it will ever be appropriate for the U.S. Nuclear Regulatory Commission to terminate a license for a repository after decommissioning. Provisions must be made for adequate federal funding to support a monitoring and possible control program to be administered by the State after decommissioning.

Staff Response to Comment No. 154:

See response to Comment No. 153. Also, the DOE, not the NRC, has the responsibility for developing and administering the monitoring program. The NRC does not know the extent to which the DOE will include the host State in this monitoring program.

ONE COMMENTER ADDRESSED POST-COMMISSIONING MONITORING

Comment No. 155: Mississippi Department of Natural Resources (15)

In the license amendment to decommission the description of the program for post-decommissioning monitoring should be more specific and require some minimum level of activity in perpetuity.

Staff Response to Comment 155:

DOE will provide information on a proposed program for post-decommissioning monitoring and land use control. See, especially, paragraph 60.51(a). The minimum level of these activities is a subject that should more appropriately be raised in connection with the technical criteria to be issued by the Commission.

ONE COMMENTER ADDRESSED THE ISSUE OF APPROVAL OF PROPOSALS

Comment No. 156: James G. McCray (8)

Paragraph 60.83(c):

Add: "...., the decision shall be approved by the Commission and shall state the reason for the rejection."

Comment:

If there is a requirement that the state plan be signed by the State Governor, then it seems appropriate that any rejection be approved at the highest level, i.e., the Commission.

Staff Response to Comment No. 156:

The Commission has a responsibility to act in a quasi-judicial capacity in connection with applications submitted by DOE.

Any participation by the Commission in staff activities related to an application, or in contemplation of such an application, should be avoided, so as to preserve the Commission's ability to consider all questions exclusively on the basis of the record compiled in formal proceedings. For this reason, the decision in question is properly that of the Director of the Office of Nuclear Material Safety and Safeguards.

## ONE COMMENTER ADDRESSED POTENTIAL CONFLICTS OVER NATURAL RESOURCES

### Comment No. 157: Natural Resources Defense Council (12)

Primarily because the principal focus of DOE's site selection program of DOE's Office of Nuclear Waste Isolation is on salt deposits, potential conflict with natural resources is a major concern in considering the adequacy of site characterization reports and license applications. DOE's advocacy of the WIPP site near Carlsbad, New Mexico, and its emphasis on salt domes for disposal of commercial wastes, underscore this concern. Yet, the proposed regulations do not address the issue of potential conflicts over natural resources. This is a fatal omission. (See, §60.21.) Indeed, consideration of this issue may be even more important in terms of finding an acceptable site than the other technical areas of concern currently identified in the proposed regulations. (§60.21(c).)

The final regulations should require, in DOE's site characterization reports and license applications, a full discussion of the presence and potential of natural resources as a threat to the integrity of the waste containment system. In particular, DOE should be directed to evaluate the probability and possible consequences of extraction of resources in the area of the proposed site, assuming that the human intruders are unaware of the presence of deposited radioactive wastes.

### Staff Response to Comment No. 157:

Appropriate revisions have been made to take the concerns into account. Although the staff believes the issues were implicit in the proposed regulations, a clarification of the point does appear to be desirable.

## ONE COMMENTER SUGGESTED THE USE OF THE TERM "PRELIMINARY INFORMATION"

### Comment No. 158: Shaw, Pittman, Potts and Trowbridge (14)

In the reactor licensing context, 10 CFR §50.34(a) acknowledges that the construction permit application may contain "preliminary" information. Thus, the preliminary safety analysis report may include the "preliminary design of the facility," §50.34(a)(4), a "preliminary plan for the applicant's organization," §50.34(a)(6), and a discussion of "preliminary plans for coping with emergencies," §50.34(a)(10). Proposed Part 60 does not contain comparable language. Indeed, the language of §60.24(a) that the application be "as complete as possible in light of information that is reasonably available at the time of submission" could be read to imply the need to go beyond the preliminary information more typical of the pre-construction stage.

### Staff Response to Comment No. 158:

See response to Comment No. 130.

## ONE COMMENTER ADDRESSED REPOSITORY DESIGN CHANGES

### Comment No. 159: Rockwell International (20)

Another concern of ours is the requirement that during construction, the repository is evaluated for conformance with the design. It is our understanding that mines (and in essence a geologic repository is a mine) are usually "developed" and cannot be "designed" in detail without extensive exploratory drilling. We believe that this exploratory drilling should be done during the site characterization phase and in sufficient depth to permit the design of the mine. It should be recognized that design changes will probably be required as the mine is developed, as the exploratory drilling and mining cannot cover all contingencies.

### Staff Response to Comment No. 159:

The NRC anticipates that the DOE will conduct borehole drillings as part of site exploration and site characterization. "Extensive" exploratory drilling suggested by the commenter is not deemed practical because of the risk that the integrity of the site might be compromised by extensive borehole drilling. The NRC assumes that the DOE will refer to information obtained during site characterization when designing a repository for a site.

The NRC recognizes that the design need not be so specific as to prevent adjustments from being made in the course of construction, subject to conditions set out in the construction authorization. However, we have provided for DOE to inform NRC of significant data obtained during the course of construction, paragraph 60.32(b) and in the updated application prior to issuance of a license, paragraph 60.24(b).

## ONE COMMENTER ADDRESSED THE EXTENT OF NRC COMMENT ON DOE PLANS

### Comment No. 160: Westinghouse Electric Co. (5)

Note that not only can NRC (Director) comment on site work, but based upon DOE's research and development in waste matters he is free to comment on all such matters, and can do so, presumably, based upon preliminary data that DOE would furnish under the explanation of "Other Reviews," Page 70412. The Director

can also provide ..."specific guidance on technical matters, relevant to licensing requirements." This can seriously delay the timing for DOE's submission for construction authorization, and receipt of wastes (Part 3).

Staff Response to Comment No. 160:

The cited language concerns reviews other than those described in the proposed regulations. The staff's objective is to assure that DOE has as much insight into NRC staff views, on a timely basis, as the staff can provide. Contrary to the commenter's suggestion, NRC thinks that this dialogue should result in DOE's receiving useful guidance that should speed up the preparation and review of its submittals.

ONE COMMENTER ADDRESSED STATUTORY LANGUAGE

Comment No. 161: Sierra Club (9)

The standard to be applied in deciding whether to authorize construction of a geologic repository is entirely too weak. (Section 60.31) The required "Safety" findings (Section 60.31(a)) is merely that there be a "reasonable assurance" that the types and amounts of wastes in the application "can be received, possessed, and disposed of in a repository of the design proposed without unreasonable risk to the health and safety of the public." This finding is entirely too lax.

Similarly, the suggested "Common defense and security" finding (Section 60.31(b)) is so vague as to be of no consequence.

Staff Response to Comment 161:

The safety finding parallels a provision applicable to the issuance of a construction permit for a nuclear reactor. Paragraph 50.35(a)(4)(ii) of 10 CFR Part 50. Although there are significant differences between repositories and reactors, the staff sees no justification for specifying here a standard more rigorous than the "reasonable assurance" language in Part 50. On the contrary, the staff must consider uncertainties about geological conditions that can only be resolved during construction; because of these uncertainties, construction authorization for a repository might not require the same degree of assurance that the staff would expect before allowing reactor construction to proceed. In

each situation, however, the staff will insist upon assurance that is "reasonable" in the context of the decision that is being made.

The common defense and security finding satisfies any applicable legal requirements. In fact, these matters are not expected to be important in the staff review; in the absence of persuasive showings to the contrary, the staff could place substantial reliance upon the certification of DOE. Paragraph 60.21(b)(3). DOE is unique in this regard, because it shares with NRC the responsibility under the Atomic Energy Act to protect the common defense and security. The objective of the Energy Reorganization Act, Section 202, was to assure that the specified waste-management activities be conducted safely, and it is this concern that the staff must address carefully. The staff does not believe that it is called upon to review common defense and security issues, except to the extent necessary to make the formal findings stated in the Atomic Energy Act.

#### ONE COMMENTER ADDRESSED THE FEDERAL LAND POLICY AND MANAGEMENT ACT OF 1976

##### Comment No. 162: U.S. Geological Survey (18)

Although not strictly an earth-science matter, we note in passing that the proposed regulations do not consider possible interfaces with existing regulations governing Federal lands, specifically the Federal Land Policy and Management Act of 1976.

##### Staff Response to Comment No. 162:

These interfaces will become more evident in connection with those sections of technical criteria that describe the interests in land that DOE must hold.

#### ONE COMMENTER ADDRESSED LICENSE CONDITIONS

##### Comment No. 163: Shaw, Pittman, Potts and Trowbridge (14)

§60.43(b): The proposed regulation would require that license conditions cover "restrictions as to location, size, configuration and physical characteristics..."

of the storage medium." These would seem to be governed by the nature of the site selected. Thus, license conditions would be unnecessary.

Staff Response to Comment No. 163:

NRC agrees with this comment. The enumerated factors are important at the construction stage, and could be treated in conditions included in the construction authorization. §60.32(a). They should not be needed in the license, and could in any event be inserted, if necessary, under the general language of §60.62(a). The wording in question has been deleted.

ONE COMMENT ADDRESSED THE ISSUE OF FORMAL PUBLIC HEARINGS PRIOR TO CONSTRUCTION AUTHORIZATION

Comment No. 164: League of Women Voters

While the proposed rule provides opportunities for formal hearings during the siting and licensing process, it leaves the decision on whether hearings are actually needed to the NRC Commission. [2.105(a)] Considering the national importance of such projects and the concern that State and local governments and the general public have expressed with regard to nuclear waste disposal, it seems reasonable to require mandatory hearings before any HLW repository is authorized for construction.

Staff Response to Comment No. 164:

See response to Comment No. 66.

THE FOLLOWING COMMENT ADDRESSED THE CULTURAL RESOURCE REVIEW PROCESS

Comment No. 165: Hester A. Davis, Arkansas Archeological Survey

I am interested in the proposed licensing procedures, especially regarding how the cultural resource review process will be initiated. Although it is not explicitly stated in the proposed rules, I assume that a review by the State Historic Preservation Officer will be required in the early stages of site characterization, prior to earth disturbing activities. I think that some statement concerning the timing of State Historic Preservation Officer review should be made in the final procedures for radioactive waste disposal.

Staff Response to Comment No. 165:

Site characterization activities would precede the commencement of NRC licensing proceedings. Accordingly, DOE would have the responsibility for initiating cultural resource reviews at that stage.



APPENDIX A

Comparative Text of the proposed 10 CFR Part 60  
procedural rule and the final 10 CFR Part 60 procedural rule

Enclosure "B"

NUCLEAR REGULATORY COMMISSION

[10 CFR PARTS 2, 19, 20, 21, 30, 40, 51, 60, AND 70]

DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES

Licensing Procedures

AGENCY: Nuclear Regulatory Commission.

ACTION: Final Rule.

SUMMARY: The Nuclear Regulatory Commission is publishing a final rule on the disposal of high-level radioactive wastes at geologic repositories (10 CFR Part 60, and conforming amendments). The rule sets forth requirements applicable to the Department of Energy in submitting an application for a license for such activities and specifies the procedures which the Commission will follow in considering such an application. The rule also sets forth provisions for consultation and participation in the license review by State, local and Indian tribal governments.

DATES: Effective date: (to be 30 days after publication in the FEDERAL REGISTER)

FOR FURTHER INFORMATION CONTACT:

I.C. Roberts, Assistant Director for Siting Standards, Office of Standards Development, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555, telephone (301) 443-5985.

SUPPLEMENTARY INFORMATION:

Background

In December 1979, the Nuclear Regulatory Commission published for comment a proposed rule setting forth procedures for licensing geologic

high-level radioactive waste (HLW) repositories to be constructed and operated by the Department of Energy (DOE). (44 FR 70408) The proposed rule superseded the proposed General Statement of Policy published for comment in November 1978. (43 FR 53869) Public comment on the proposed rule (10 CFR Part 60) was received from thirty-four groups and individuals. The rule that is the subject of this notice does not differ significantly from the proposed 10 CFR Part 60, although several clarifications have been made in the rule as a result of comments received. This rule contains only the procedural requirements for licensing. The technical criteria against which the license application will be reviewed are still under development. The current staff thinking on the technical criteria was reflected in an Advance Notice of Proposed Rulemaking and draft technical criteria published for public comment in May 1980. (45 FR 31393)

#### Authority and Rationale

Sections 202(3) and (4) of the Energy Reorganization Act of 1974, as amended, provide the NRC with licensing and regulatory authority regarding DOE facilities used primarily for the receipt and storage<sup>1</sup> of the high-level radioactive wastes resulting from activities licensed under the Atomic Energy Act and certain other long-term, high-level waste storage facilities of the DOE. Pursuant to that authority, the Commission is promulgating regulations appropriate for licensing geologic disposal of HLW by the DOE. The requirement in the rule that DOE submit a site characterization report in advance of performing exploration (which

<sup>1</sup>The Commission interprets "storage" as used in the Energy Reorganization Act to include disposal.

may include in situ testing at depth) also implements Section 14(a) of the NRC Authorization Act of 1979 (Pub. L. 95-601).<sup>2</sup> DOE is responsible for developing the methods and technology for the permanent disposal of high-level radioactive waste in a Federal repository, and for submitting a license application for a potential repository. The licensing procedures in this rule will be supplemented by technical criteria which will be developed by the Commission in the light of such generally applicable environmental standards as may have been established by the Environmental Protection Agency under Reorganization Plan No. 3 of 1970.

#### Comments

A total of thirty-four groups and individuals commented on the proposed rule, addressing a variety of issues. Most of the commenters viewed the proposed rule as a significant improvement over the proposed General Statement of Policy, and, generally, the comments were supportive of the principles and procedures outlined in the proposed rule. The principal comments received relate to multiple site characterization, in situ testing at depth, cost estimates for site characterization, whether the rule should require that the site selected by DOE be the "best", whether an environmental impact statement (EIS) should be required for site

<sup>2</sup>Section 14(a) reads as follows: Any person, agency, or other entity proposing to develop a storage or disposal facility, including a test disposal facility, for high-level radioactive wastes, non-high-level radioactive wastes including transuranium contaminated wastes, or irradiated nuclear reactor fuel, shall notify the Commission as early as possible after the commencement of planning for a particular proposed facility. The Commission shall in turn notify the Governor and the State legislature of the State of proposed site whenever the Commission has knowledge of such proposal.

characterization, whether the Commission should prepare an EIS for this rulemaking action, opportunities for State, local and public participation, formal public hearings, the preliminary nature of some information to be included in an application for construction authorization, and the termination of a license following decommissioning. Summaries of the comments received on these issues are presented below. Copies of the comments and an analysis of them by the NRC staff are available in the Commission's Public Document Room. Some of the commenters raised issues that will be covered in the technical criteria; those will be dealt with in connection with the ongoing rulemaking for those criteria.

a. Site Characterization. Comments on site characterization straddled the Commission position set forth in the proposed rule. Some commenters agreed with the requirement for multiple site characterization as presented in the proposed rule. Some commenters expressed the opinion that multiple site characterization was not required for the Commission to fulfill its NEPA obligation to consider alternative proposals. The Commission has carefully reviewed arguments presented by the commenters who stated that multiple site characterization is not necessary. The Commission continues to believe that required multiple site characterization provides the only effective means by which it can make a comparative evaluation as a basis for arriving at a reasoned decision under NEPA. Other commenters believe that the requirements for multiple site characterization were not stringent enough, and suggested that the rule specify the number of geologic media and sites to be characterized by the DOE. The Commission continues to believe that characterization of several sites will prevent a premature commitment by DOE to a particular site, and will assure that DOE's preferred site will be chosen from a slate of candidate

sites that are among the best that can reasonably be found. The Commission considers three sites in two geologic media to be the minimum number needed to satisfy NEPA. However, the Commission does not believe that it would be appropriate for the rule to specify the number of geologic media and sites that DOE must characterize during multiple site characterization. What is important is that there be sufficient information for NRC to be able to evaluate real alternatives, in a timely manner, in accordance with NEPA. (Information on plans for considering alternative sites is to be included in the Site Characterization Report. This provision was questioned by some commenters. This information is needed so that any deficiency may be the subject of a "specific recommendation" by the Director of the NRC's Office of Nuclear Material Safety and Safeguards, (Director) as provided in §60.11(e), with respect to additional information that might be needed by the Commission in reviewing a license application in accordance with NEPA. The NRC also continues to believe that waste form research is an appropriate topic for treatment in the site characterization report, as the discussion may lead to specific recommendations by the Director, and, as well, contribute to early examination and broader understanding of possible waste form host rock interactions.) Further, wording of §60.11(a) has been changed from "waste form" to "waste form and packaging" to better convey that the NRC was seeking information relating to the interaction of the waste as emplaced (hence including packaging) with the host rock.

In response to one commenter's suggestion that the site characterization report be made to NRC on a site by site basis, §60.11(a) has been revised to require DOE to submit a separate site characterization report for each site to be characterized.

There were also suggestions that the distinction between site characterization and screening activities be drawn more sharply. However, because the activities needed prior to characterization may depend on a variety of factors peculiar to the site and geologic medium, the NRC has concluded that greater precision might be unduly restrictive.

The DOE requested clarification of the term "site". A definition of the term site will be set forth in the technical criteria.

b. In Situ Testing at Depth. Several commenters supported the Commission view on in situ testing at depth. Some commenters, noting the importance of in situ testing at depth, suggested that the rule require the DOE to include in situ testing at depth in its site characterization program. Several other commenters objected to the Commission suggestion that in situ testing at depth may be necessary. The possibility of in situ testing at depth after a preferred repository site has been selected was also suggested. The Commission continues to believe that in situ testing at depth<sup>3</sup> is probably an essential technique for DOE to obtain sufficient data to determine whether and to what extent the surrounding geologic medium is suitable for hosting a geologic repository. Moreover, in order for NRC to be able to conclude that the alternatives to DOE's preferred site are in fact reasonable alternatives for the intended purpose, in situ testing at depth is probably essential to characterizing alternative sites as well. The NRC will then be able to determine, after considering all relevant environmental factors as

<sup>3</sup>The Commission interprets the phrase "in situ testing at depth" to mean the conduct those geophysical, geochemical, hydrologic, and/or rock mechanics tests performed from a test area at the base of a shaft excavated to the proposed depth of a potential repository in order to determine the suitability of a particular site for a geologic repository.

contemplated by NEPA, whether a construction authorization at DOE's proposed site should be issued.

However, the Commission does not categorically require in situ testing at depth in the rule, since it is conceivable that in some instances at a particular site the data needed to establish that the site is suitable to host a repository may be obtained without in situ testing at depth. DOE, like any applicant for an NRC license, has the burden of establishing that NRC requirements have been met, and the regulations require DOE to undertake any testing needed to determine the suitability of the site for a geologic repository. Thus, if DOE chose not to explore at depth it would not be relieved in any way of the burden of obtaining and supplying to the Commission information needed to establish the suitability of the site.

c. Cost Estimates for Site Characterization. Cost estimates for site characterization cited in the supplementary information accompanying the proposed rule were regarded by some commenters as being too low. Much of the data for the cost estimate of \$20 million per site was derived from the Teknekron Inc. report, "A Cost Optimization Study for Geologic Isolation of Radioactive Wastes," May 1979, prepared under contract with Battelle Pacific Northwest Laboratories. The NRC staff has reexamined its previous estimate and still believes that figure of \$20 million was a realistic estimate for the "at depth" portion of the site characterization program considered at that time. Independent support of this figure has been obtained from the cost summary of \$16 million for a program analogous to site characterization conducted by the Bureau of Mines at its Environmental Research Facility in Colorado during 1978-1979.



The DOE has developed a preliminary design for an underground test facility in New Mexico at which many site characterization activities could be conducted. The estimated cost of the facility was \$27 million (1980 dollars). This figure has been confirmed by the American Mine Services under contract to NRC. The scope of the DOE preliminary design surpasses the extent of activities suggested for the "at depth" portion of site characterization in the proposed rule. For example, the DOE Site Preliminary Verification Project Plan includes extensive underground mining development. The staff has come to believe, however, that a facility consisting of two shafts and up to 1,000 feet of tunnels is a more practical arrangement for conducting tests and experiments at depth for site characterization. Therefore, the staff believes the \$27 million figure represents the upper limit for the "at depth" portion of site characterization in soft rock. Cost estimates for site characterization including in situ testing at depth in hard rock may range up to 30% more than cost figures for soft rock.

d. The "Best" Site. Some commenters suggested that the final rule should require that the site selected by the DOE be the "best". Yet other commenters thought that the Commission was setting an unattainable goal of perfection for the selection of the site for a geologic repository. It remains the Commission's view that the process of multiple site characterization provides a workable mechanism by which the DOE will be able to develop a slate of candidate sites that are among the best that can reasonably be found and from which DOE will select its preferred site.

It generally has been NRC practice to consider only whether a license application meets prescribed criteria. The Commission perceives no reason to adopt a different philosophy here.

e. Environmental Impact Statement. Some commenters believed that the NRC should require that the DOE submit an environmental impact statement (EIS) at the site characterization stage. Other commenters believed that DOE need only submit an Environmental Report or an Environmental Assessment for site characterization. In its comment letter on the proposed rule, the DOE stated that a decision to bank or withdraw a site or to conduct a site characterization by more extensive methods such as sinking a shaft will require the preparation of an EIS. In any event, since NRC is undertaking no "major Federal action" in connection with site characterization, it has no statutory basis for prescribing what steps DOE must take in order to be in compliance with NEPA.

The rule requires submission of an environmental report along with the safety analysis report. If DOE has prepared an environmental impact statement, that document can be used so long as it contains the information called for in the regulation. However, NRC cannot be bound to accept judgments arrived at by DOE in its environmental impact statement.

One commenter suggested that the NRC should prepare an EIS for the rulemaking action. The Commission determined that this was not necessary as part of its review and approval of publication of the proposed rule. Instead an environmental impact appraisal was prepared for those requirements which might have environmental impacts. These impacts were not found to be significant. This environmental impact appraisal has recently been updated and no new impact was found to be significant. A copy of the updated appraisal is available for inspection and copying at the Commission's Public Document Room.

f. State, Local, and Public Participation. The proposed rule included detailed provisions to ensure extensive opportunities for participation by

State, and local governments and the general public in the review of the DOE's programs for site selection and site characterization. The consultation role of the States in reviewing applicable NRC regulations and licensing procedures, as well as participation in the licensing process, was treated explicitly in the proposed rule. However, a more formal role of consultation and concurrence for States was requested by some commenters. Suggestions were also made that the Commission require the DOE to solicit input from State, Indian tribal and local governments as well as from the general public prior to and during site characterization.

The Commission's views on this subject were set out at length in a report submitted to the Congress on "Means for Improving State Participation in the Siting Licensing and Development of Federal Nuclear Facilities" NUREG-0539, March 1979, cited in the supplementary information accompanying the proposed rule. The concerns of the commenters on broad policy issues such as consultation and concurrence would require actions by parties other than the Commission. Within the context of NRC's existing authority, appropriate opportunities for meaningful State and public participation have been developed. No serious deficiencies in these opportunities have been pointed out to the NRC. It should be noted, however, that proposals for intervenor funding have not been incorporated as suggested by some commenters. This question may be addressed separately in the context of rulemaking applicable to various adjudicatory proceedings, should the Commission be given statutory authority, which it now lacks, to provide such funding.

In response to commenters' suggestions, the rule has been clarified with respect to notice to, and participation by Indian tribes.

g. Public Hearings. The issue of whether public hearings should be mandatory during the pre-licensing and/or licensing stages of geologic

disposal of HLW was addressed by a number of commenters. Two commenters suggested that hearings be required prior to site characterization. One commenter suggested that public hearings should be held in the vicinity of a proposed site prior to the approval of a Site Characterization Report, while another commenter suggested that hearings be held prior to in situ testing at depth. It was also proposed by another commenter that public hearings be held on DOE's research and development work on waste forms. Finally, two other commenters believed that formal hearings should be mandatory prior to granting construction authorization to DOE. The NRC has considered the possibility of hearings prior to site characterization, and continues to maintain its position as set forth in the Notice of Proposed Rulemaking at 44 FR 70409 that with respect to a geologic repository, reconnaissance level data alone will not support a presumption that a site is suitable with respect to safety for a repository. Hence, any decision on alternative site issues at this early point is likely to require reexamination at the construction authorization proceedings and, therefore, would be of questionable value.

However, the NRC has considered the advisability of public hearings at the construction authorization stage, has determined that such hearings are required in the public interest and has included provisions for mandatory public hearings prior to granting construction authorization (10 CFR 2.104). In addition, hearings will be held upon the request of any interested person prior to finally granting a license to receive and possess high-level radioactive waste at a geologic repository operations area and before granting license amendments to decommission or terminate a license.

h. Preliminary Nature of the Information to be Included in an Application for Construction Authorization. A number of commenters

expressed the opinion that the wording of §60.21 did not explicitly reflect the preliminary nature of some of the information that would be available at the construction authorization stage. Some commenters believed that some categories of information, such as emergency plans and plans for retrieval did not seem necessary, at least in full detail, at the construction authorization stage. In view of the fact that §60.21 must be read in conjunction with §60.24(a), which specifies that the application "shall be as complete as possible in light of information that is reasonably available at the time of docketing," no change to the proposed rule is required. Further, §60.24(b) specifically lists several categories of information which, where appropriate, may be left for consideration only at the stage of license issuance.

i. Termination of a License. Two commenters opposed the provisions (§60.52) for the termination of a license for a repository after decommissioning. The NRC believes that there will be considerable debate regarding license termination during the period between adoption of rules and implementation of their provisions. Although the NRC could have omitted the topic altogether, it believes that some recognition of the issue is desirable so that the rule covers the entire process. It should be noted that there is no assurance under the language that the license would be terminated since a decision to do so could only be made if "authorized by law."

#### Changes

The final rule contains the following changes from the proposed rule as published in December 1979.

a. Definition of the term "Disposal". Commenters noted that the proposed definition of the term "disposal" embodied the contradictory concepts of "permanent emplacement" and possible retrieval for purposes

other than resource value. The definition has been modified to reflect usage of the term "disposal" in the rule to characterize the condition in which isolation is required. (§60.2(e))

b. Incidental Uses of Radioactive Materials. The DOE noted that the proposed rule could have the effect of prohibiting the use of source, special nuclear, and byproduct materials at the site during site characterization and facility construction. The DOE referred to the desirability of being able to use such materials, for example as radiography sources and radiation monitor test sources. There may also be a need to employ a small amount of radioactive material for in situ testing in the course of site characterization activities.

The Commission did not intend to restrict DOE's use of radioactive materials for the stated purposes, and has clarified the point by adding a new section, §60.7, which expressly recognizes that DOE (which is exempt from NRC licensing except as expressly required to be licensed) need not be licensed for such preliminary activities. This is not an exemption under the exemption provisions of the Atomic Energy Act, but rather an interpretation of the Commission's jurisdiction under Section 202 of the Energy Reorganization Act of 1974. In other words, the "facility" that the NRC is licensing is one at which high-level radioactive wastes are actually stored. To the extent that the procedures call for earlier NRC involvement, that involvement would be undertaken with a view to long-term health and safety considerations; but during site characterization and prior to emplacement of waste, there would be no "facility" for storage of high-level waste and no basis.

Once operations at a facility have been licensed, the Commission believes it should regulate the use of all licensable materials onsite, so as to avoid fragmentation of responsibility and accountability with respect to radiological safety (particularly as it may affect occupational exposures).

The change does not respond to the DOE's additional concern that the proposed rule would prohibit construction and operation of a surface facility for the storage of spent reactor fuel at a repository site prior to issuance of a Part 60 license. Should this situation actually arise in practice, the Commission would consider granting an exemption so as to permit licensing to be carried out under other parts of NRC regulations.

c. Site Characterization Report. One commenter on the proposed rule suggested that the description of the DOE's planned site characterization program include a preliminary design of the repository. Knowledge of the proposed design would help indicate how the testing program related to the repository layout. The Commission has made it explicit that the site characterization report include a conceptual design of the geologic repository operations area. This is needed so as to permit analysis of certain aspects of the site characterization program: (§60.11(a).)

The provisions of §60.11(g) have been changed to require DOE to permit NRC staff to visit the site and observe excavations, borings, and in situ tests as they are done. The NRC believes that such a requirement is essential for NRC to determine that site characterization activities have no adverse impacts upon site safety.

The proposed rule contained provisions which would permit the DOE to include multiple sites in a single site characterization report. In response to public comment, and for the sake of clarity, the final rule

requires a separate site characterization report for each site to be characterized.

The Commission reiterates that the site characterization report will be reviewed by the NRC staff with opportunity for public comment on both the report and a staff analysis of the report. Also, the Commission continues to anticipate that it will hold local public hearings in the immediate area of the site to be characterized. These meetings will be held both to disseminate information and to obtain public input which will be factored into the final version of the staff analysis.

The period for comment on the NRC's draft site characterization analysis has been extended from a minimum of 60 days to a minimum of 90 days in response to public comment. (§60.11(e))

The provision concerning semiannual progress reports has been expanded so as to provide additional guidance to the DOE on the contents of those reports. (§60.11(g).)

d. Construction Authorization Findings. The necessary findings by the Commission on environmental matters (§60.31(c)) have been revised to conform to the language in other portions of the Commission's regulations. Contrary to the views expressed by a commenter, the Commission regards this provision as being fully consistent with the requirements of NEPA.

The Commission has declined to modify the common defense and security finding as suggested by one commenter. The Commission's review of the history of the Energy Reorganization Act of 1974 indicates that NRC's review was deemed to be important to protect the health and safety of the public; the Commission thinks it is appropriate to rely upon DOE to take action to protect the common defense and security inasmuch as it shares with NRC such responsibilities under the Atomic Energy Act.



e. Conditions of Construction Authorization. The final rule specifies (§60.32(b)) that the construction authorization "will incorporate" conditions requiring the submission of certain periodic or special reports. This wording differs from that of the proposed rule which stated that the Commission "may, at its discretion incorporate" these conditions. The NRC agrees with a commenter that such reports will be needed and that there is no reason to reserve discretion, as the proposed rule would have done. The particulars of the conditions would, of course, depend upon the nature of the project that is to be constructed.

f. License Specifications. The Commission has accepted a suggestion to delete a requirement for including, as license conditions, restrictions as to the location and characteristics of the storage medium. As noted by a commenter, these features may be inherent in the storage medium itself.

g. Inspections. The final rule contains a provision (§60.73(c)) requiring DOE to provide on site office space for the exclusive use of NRC inspectors and personnel.

h. Participation of Indian Tribes. Several changes have been made in the rule to provide for full participation by Indian tribes in the licensing procedures. These changes generally provide that tribes shall have the same opportunities as governmental units. A new Section 60.64 provides that Indian Tribes shall have the same opportunities as States to submit proposals for their participation in the NRC review. These proposals shall be approved (and may be funded) if appropriate findings can be made concerning the contribution to be made of the licensing review. A new Section 60.65 makes it clear, however, that the Director shall endeavor to avoid duplication of effort when acting on multiple proposals, to the

extent that this can be accomplished without substantial prejudice to the parties involved.

Pursuant to the Atomic Energy Act of 1954, as amended, the Energy Reorganization Act of 1974, as amended, Public Law 95-601 (November 6, 1978), the National Environmental Policy Act of 1969, as amended, and sections 552 and 553 of title 5 of the United States Code, notice is hereby given that the following amendments to Title 10, Chapter I, Code of Federal Regulations are published as a document subject to codification.

PART 2  
RULES OF PRACTICE

1. 10 CFR 2.101 is amended to add a new subsection (f) to read as follows:<sup>1</sup>

§2.101 Filing of application.

\* \* \* \* \*

(f)(1) Each application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter and any environmental report required in connection therewith pursuant to Part 51 of this chapter shall be processed in accordance with the provisions of this paragraph.

(2) To allow a determination as to whether the application or environmental report is complete and acceptable for docketing, it will be initially treated as a tendered document, and a copy will be available for public inspection in the Commission's Public Document Room. Twenty copies shall be filed to enable this determination to be made.

<sup>1</sup>As compared to text of proposed rule additions are underscored and deletions are bracketed and lined through.

(3) If the Director of Nuclear Material Safety and Safeguards determines that the tendered document is complete and acceptable for docketing, a docket number will be assigned and the applicant will be notified of the determination. If it is determined that all or any part of the tendered document is incomplete and therefore not acceptable for processing, the applicant will be informed of this determination and the respects in which the document is deficient.

(4) With respect to any tendered document that is acceptable for docketing, the applicant will be requested to (i) submit to the Director of Nuclear Material Safety and Safeguards such additional copies as the regulations in Parts 60 and 51 require, (ii) serve a copy on the chief executive of the municipality in which the geologic repository operations area is to be located or, if the geologic repository operations area is not to be located within a municipality, on the chief executive of the county (or to the Tribal organization, if it is to be located within an Indian reservation), and (iii) make direct distribution of additional copies to Federal, State, Indian Tribe, and local officials in accordance with the requirements of this chapter and written instructions from the Director of Nuclear Material Safety and Safeguards. All such copies shall be completely assembled documents, identified by docket number. Subsequently distributed amendments, however, may include revised pages to previous submittals and, in such cases, the recipients will be responsible for inserting the revised pages.

(5) The tendered document will be formally docketed upon receipt by the Director of Nuclear Material Safety and Safeguards of the required additional copies. The date of docketing shall be the date when the required copies are received by the Director of Nuclear Material Safety

and Safeguards. Within ten (10) days after docketing, the applicant shall submit to the Director of Nuclear Material Safety and Safeguards a written statement that distribution of the additional copies to Federal, State, Indian Tribe, and local officials has been completed in accordance with requirements of this chapter and written instructions furnished to the applicant by the Director of Nuclear Material Safety and Safeguards. Distribution of the additional copies shall be deemed to be complete as of the time the copies are deposited in the mail or with a carrier prepaid for delivery to the designated addressees.

(6) Amendments to the application and environmental report shall be filed and distributed and a written statement shall be furnished to the Director of Nuclear Material Safety and Safeguards in the same manner as for the initial application and environmental report.

(7) The Director of Nuclear Material Safety and Safeguards will cause to be published in the FEDERAL REGISTER a notice of docketing which identifies the State and location at which the proposed geologic repository operations area would be located and will give notice of docketing to the governor of that State.

2. 10 CFR 2.103(a) is revised to read as follows:

§2.103 Action on applications for byproduct, source, special nuclear material, and operator licenses.

(a) If the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, finds that an application for a byproduct, source, special nuclear material, or operator license complies with the requirements of the Act, the Energy Reorganization Act, and this chapter, he will issue a license. If the license is

for a facility or for receipt of waste radioactive material from other persons for the purpose of commercial disposal by the waste disposal licensee, or if it is to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, the Director of Nuclear Reactor Regulation or the Director of Nuclear Material Safety and Safeguards, as appropriate, will inform the State, Indian Tribe, and local officials specified in § 2.104(e) of the issuance of the license.

3. 10 CFR 2.104(a) is amended to read as follows:

§2.104 Notice of Hearing.

\* \* \* \* \*

(a) In the case of an application on which a hearing is required by the Act or this chapter, or in which the Commission finds that a hearing is required in the public interest, the Secretary will issue a notice of hearing to be published in the FEDERAL REGISTER as required by law at least fifteen (15) days, and in the case of an application concerning a construction permit for a facility of the type described in §50.21(b) or §50.22 of this chapter or a testing facility, at least thirty (30) days, prior to the date set for hearing in the notice.<sup>2</sup> In addition in the case

<sup>2</sup>If the notice of hearing concerning an application for a construction permit for a facility of the type described in §50.21(b) or §50.22 of this chapter or a testing facility does not specify the time and place of initial hearing, a subsequent notice will be published in the FEDERAL REGISTER which will provide at least thirty (30) days notice of the time and place of that hearing. After this notice is given the presiding officer may reschedule the commencement of the initial hearing for a later date or reconvene a recessed hearing without again providing thirty (30) days notice.

of an application for a construction permit for a facility of the type described in §50.22 of this chapter, or a testing facility, the notice (other than a notice pursuant to paragraph (d) of this section) shall be issued as soon as practicable after the application has been docketed: Provided, That if the Commission, pursuant to §2.101(a)(2), decides to determine the acceptability of the application on the basis of its technical adequacy as well as completeness, the notice shall be issued as soon as practicable after the application has been tendered. The notice will state:

- (1) The time, place, and nature of the hearing and/or prehearing conference, if any;
- (2) The authority under which the hearing is to be held;
- (3) The matters of fact and law to be considered; and
- (4) The time within which answers to the notice shall be filed.

In addition, any notice of hearing published with regard to an application for a license to receive and possess high-level waste at a geologic repository operations area pursuant to Part 60 of this chapter shall provide that the hearing will be held prior to issuance of authorization to construct such geologic repository operations area.

[3-]4. 10 CFR 2.104(e) is amended to read as follows:

§2.104 Notice of hearing.

\* \* \* \* \*

(e) The Secretary will give timely notice of the hearing to all parties and to other persons, if any, entitled by law to notice. The

Secretary will transmit a notice of hearing on an application for a facility license or for a license for receipt of waste radioactive material from other persons for the purpose of commercial disposal by the waste disposal licensee or for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter to the Governor or other appropriate official of the State and to the chief executive of the municipality in which the facility is to be located or the activity is to be conducted or, if the facility is not to be located or the activity conducted within a municipality, to the chief executive of the county (or to the Tribal organization, if it is to be so located or conducted within an Indian reservation).

[4:]5. 10 CFR 2.105(a) is amended by adding a new subparagraph (3), renumbering existing subparagraphs (3) and (4) as (4) and (5), amending the subparagraph renumbered as (4) and adding an undesignated final paragraph to read as follows:

§2.105 Notice of proposed action.

(a) If a hearing is not required by the Act or this chapter, and if the Commission has not found that a hearing is in the public interest, it will, prior to acting thereon, cause to be published in the FEDERAL REGISTER a notice of proposed action with respect to an application for:

\* \* \* \* \*

(3) A license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter;

(4) An amendment of a license specified in paragraph (a)(1), (2), or (3) of this section and which involves a significant hazards consideration; or

(5) Any other license or amendment as to which the Commission determines that an opportunity for a public hearing should be afforded.

In the case of an application for an operating license for an operating license for a facility of a type described in §50.21(b) or §50.22 of this chapter or a testing facility, a notice of opportunity for hearing shall be issued as soon as practicable after the application has been docketed.

In the case of an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area, notice of opportunity for hearing, as required by this paragraph, shall be published prior to Commission action authorizing construction and also prior to receipt of wastes at the repository. This change is in addition to the changes proposed in the prior notice.

[5-]6. 10 CFR 2.105(e) is amended by replacing the words "will issue the license" with the words "may take the proposed action" following the phrase "...or Director of Nuclear Material Safety and Safeguards, as appropriate," and by adding the words "or other action" following the phrase "...published in the FEDERAL REGISTER a notice of issuance of the license."

[6-]7. 10 CFR 2.106 is amended by adding a subsection (c) to read as follows:

§2.106 Notice of issuance.

\* \* \* \* \*



(c) The Director of Nuclear Material Safety and Safeguards will also cause to be published in the FEDERAL REGISTER notice of, and will inform the State and local officials specified in §2.104(e) of, any action with respect to an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, or for the amendment of such license, for which a notice of proposed action has been previously published.

PART 19 - NOTICES, INSTRUCTIONS AND REPORTS TO WORKERS; INSPECTIONS

§19.2 Scope.

~~[7:]~~8. 10 CFR 19.2 is amended by adding "60," following "35, 40,".

§19.3 Definitions.

~~[8:]~~9. 10 CFR 19.3(d) is amended by adding "60," following "35, 40,".

PART 20 - STANDARDS FOR PROTECTION AGAINST RADIATION

§20.2 Scope.

~~[9:]~~10. 10 CFR 20.2 is amended by adding "60," following "35, 40,".

§20.3 Definitions.

~~[10:]~~11. 10 CFR 20.3(a)(9) is amended by adding "60," following "30, 40,".

§20.301 General Requirement.

~~[11:]~~12. 10 CFR 20.301(a) is amended by adding "60," following "30, 40,".

~~[12-]~~13. 10 CFR 20.408(a) is amended by deleting the word "or" following the phrase "of this chapter;" in subparagraph (a)(3), inserting the word "or" following the phrase "of the following quantities:" in subparagraph (a)(4), and adding a new subparagraph (a)(5) to read as follows:

§20.408 Reports of personnel monitoring on termination of employment or work.

\* \* \* \* \*

(5) Possesses high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

#### PART 21 - REPORTING OF DEFECTS AND NONCOMPLIANCE

##### §21.2 Scope

~~[13-]~~14. 10 CFR 21.2 is amended by inserting "60," after "35, 40," and also by inserting "60," after "40, 50,".

##### §21.3 Definitions

~~[14-]~~15. In 10 CFR Part 21, Sections 21.3(a), 21.3(a)(a-1)(1), 21.3(a)(a-1)(2), and 21.3(k) are amended by adding "60," after "40, 50,".

§21.21 Notification of failure to comply or existence of a defect.

~~[15-]~~16. 10 CFR 21.21(b)(1)(i) and 21.21(b)(1)(ii) are amended by adding "60," after "40, 50,".

PART 30 - RULES OF GENERAL APPLICABILITY TO LICENSING  
OF BYPRODUCT MATERIAL

~~[16-]~~17. 10 CFR 30.11 is amended by adding a new subsection (c).

§30.11 Specific exemptions.

\* \* \* \* \*

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

PART 40 - DOMESTIC LICENSING OF SOURCE MATERIAL

~~[17-]~~18. 10 CFR 40.14 is amended by adding a new subsection (c).

§40.14 Specific exemptions.

\* \* \* \* \*

(c) The DOE is exempt from the requirements of this part to the extent that its activities are subject to the requirements of Part 60 of this chapter.

PART 51 - LICENSING AND REGULATORY POLICY AND PROCEDURES  
FOR ENVIRONMENTAL PROTECTION

~~[18-]~~19. 10 CFR 51.5(a) is amended by adding new paragraphs (10) and (11), and renumbering present paragraph (10) as paragraph (12) to read as follows.

§51.5 Actions requiring preparation of environmental impact statements, negative declarations, environmental impact appraisals; actions excluded.

(a) An environmental impact statement will be prepared and circulated prior to taking any of the following types of actions:

\* \* \* \* \*

(10) Issuance of a construction authorization for a geologic repository operations area pursuant to Part 60 of this chapter.

~~[(11)--issuance-of-a-license-to-receive-and-possess-high-level-radio-active-waste-at-a-geologic-repository-operations-area-pursuant-to-Part-60-of-this-chapter.]~~

~~[(12)]~~(11) Any other action which the Commission determines is a major Commission action significantly affecting the quality of the human environment.

~~[19:]~~20. 10 CFR 51.5(b) is amended by: replacing the period at the end of subparagraph (4)(iii) with a semicolon; adding a new subparagraph (4)(iv); substituting (iv) for (iii) in paragraph (5); inserting "60," following "40, 50," in paragraph (6); and adding [a] new paragraphs (9) and (10). With these changes, 10 CFR 51.5(b) reads as follows:

\* \* \* \* \*

§51.5(b)(4) Issuance of an amendment which would authorize a significant change in the types or significant increase in the amounts of effluents or a significant increase in the potential for accidental releases of a license for:

\* \* \* \* \*

(iv) The receipt and possession of high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

\* \* \* \* \*

(5) Renewal of licenses to conduct activities listed in paragraph (b)(4)(i)(iv) of this section;

\* \* \* \* \*

(9) Termination of a license for the possession of high-level radioactive waste at a geologic repository operations area at the request of the licensee.

(10) Issuance of a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter.

~~[20-]~~21. 10 CFR 51.5(d)(3) is amended by adding "60," following "40, 50,".

~~[21-]~~22. 10 CFR 51.40 is amended by revising subsection (a) to start "Except as provided in paragraphs (b), (c), and (d) of this section,..." and by adding a new subsection (d) to read as follows:

§51.40 Environmental reports.

\* \* \* \* \*

(d) The 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 the time of its application or in advance, and at the time of amendments, in the manner provided in §60.22 of this chapter, environmental reports which discuss the matters described in §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. [\*] The Commission considers the characterization of three sites representing two geologic media to be the minimum necessary to satisfy the requirements of NEPA. However, in light of the significance of the decision selecting a site for a repository, the Commission fully expects the DOE to submit a wider range of alternatives than the minimum suggested here.

[22-]23. 10 CFR 51.41 is amended to read as follows:

§51.41 Administrative procedures.

Except as the context may otherwise require, procedures and measures similar to those described in §§51.22-51.26 will be followed in proceedings for the issuance of materials licenses and other actions covered by §51.5(a) but not covered by §51.20 or 51.21. The procedures followed with respect to materials licenses will reflect the fact that, unlike the licensing of production and utilization facilities, the licensing of materials does not require separate authorizations for construction and operation. In the case of an application for a license to receive and possess high-level radioactive waste at a geologic repository operations area pursuant to Part 60 of this chapter, however, the environmental impact statement required by §51.5(a) shall be prepared and circulated prior to the issuance of a construction authorization; the environmental impact statement shall be supplemented prior to issuance of a license to

~~[\*to satisfy the requirements of NEPA; the Commission anticipates such characterization at a minimum of three sites representing a minimum of two geologic media;--However, in light of the significance of the decision selecting a site for a repository; the Commission fully expects the Department to submit a wider range of alternatives than the minimum suggested here.]~~

take account of any substantial changes in the activities proposed to be carried out or significant new information regarding the environmental impacts of the proposed activities.

24. A new Part 60 is added to read as follows:

**PART 60 - DISPOSAL OF HIGH LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES**

**SUBPART A - GENERAL PROVISIONS**

**Section**

- 60.1 Purpose and scope.
- 60.2 Definitions.
- 60.3 License required.
- 60.4 Communications.
- 60.5 Interpretations.
- 60.6 Exemptions.
- 60.7 License not required for certain preliminary activities.

**SUBPART B - LICENSES**

**PREAPPLICATION REVIEW**

- 60.11 Site characterization report.

**LICENSE APPLICATIONS**

- 60.21 Content of application.
- 60.22 Filing and distribution of application.

- 60.23 Elimination of repetition.
- 60.24 Updating of application and environmental report.

#### CONSTRUCTION AUTHORIZATION

- 60.31 Construction authorization.
- 60.32 Conditions of construction authorization.
- 60.33 Amendment of construction authorization.

#### LICENSE ISSUANCE AND AMENDMENT

- 60.41 Standards for issuance of a license.
- 60.42 Conditions of license.
- 60.43 License specifications.
- 60.44 Changes, tests, and experiments.
- 60.45 Amendment of license.
- 60.46 Particular activities requiring license amendment.

#### DECOMMISSIONING

- 60.51 License amendment to decommission.
- 60.52 Termination of license.



SUBPART C - PARTICIPATION BY STATE GOVERNMENTS AND  
INDIAN TRIBES

- 60.61 Site review.
- 60.62 Filing of proposals for State participation.
- 60.63 Approval of proposals.
- 60.64 Participation by Indian tribes.
- 60.65 Coordination.

SUBPART D - RECORDS, REPORTS, TESTS, AND INSPECTIONS

- 60.71 Records and reports.
- 60.72 Tests.
- 60.73 Inspections.

Authority: Secs. 51, 53, 62, 63, 65, 81, 161b., f., i., o., p., 182, 183, Pub. L. 83-703, as amended, 68 Stat. 929, 930, 932, 933, 935, 948, 953, 954, as amended (42 U.S.C. 2071, 2073, 2092, 2093, 2095, 2111, 2201, 2232, 2233); Secs. 202, 206, Pub. L. 93-438, 88 Stat. 1244, 1246 (42 U.S.C. 5842, 5846); Sec. 14, P.L. 95-601 (42 U.S.C. 2021a); Sec. 102(2)(c), Pub. L. 91-190, 83 Stat. 853 (42 U.S.C. 4332).

For the purposes of Sec. 223, 68 Stat. 958, as amended, 42 U.S.C. 2273, §§60.71 to 60.73 are issued under Sec. 161o., 68 Stat. 950, as amended (42 U.S.C. 2201(o)).

10 CFR PART 60  
DISPOSAL OF HIGH-LEVEL RADIOACTIVE WASTES IN  
GEOLOGIC REPOSITORIES

Subpart A - General Provisions

§60.1 Purpose and scope.

This part prescribes rules governing the licensing of the DOE to receive and possess source, special nuclear, and byproduct material at a geologic repository operations area. This part does not apply to any activity licensed under another part of this chapter.

§60.2 Definitions.

As used in this part:

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

(b) "Commencement of construction" means clearing of land, surface or subsurface excavation, or other substantial action that would adversely affect the environment of a site, but does not include changes desirable for the temporary use of the land for public recreational uses, site characterization activities, other preconstruction monitoring and investigation necessary to establish background information related to the suitability of a site or to the protection of environmental values, or procurement or manufacture of components of the geologic repository operations area.

(c) [Department]"DOE" means the U.S. Department of Energy or its duly authorized representatives.

~~[(c)]~~(d) "Decommissioning", or permanent closure, means final back-filling of subsurface facilities, sealing of shafts, and decontamination and dismantlement of surface facilities.

(e) "Disposal" means ~~[permanent-emplacment-within-a-storage-space with-no-intent-to-retrieve-for-resource-value]~~ that the Commission has determined that the emplaced wastes are, and will continue to be isolated from the biosphere and there is no need to retrieve them for the protection of the public health and safety.

(f) "Director" means the Director of the U.S. Nuclear Regulatory Commission's Office of Nuclear Material Safety and Safeguards.

(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 radioactive wastes are effectively isolated from the biosphere.

(h) "Geologic repository operations area" means a HLW facility that is part of a geologic repository, including both surface and subsurface areas, where waste handling activities are conducted.

(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.

(j) "HLW facility" means a facility subject to the licensing and related regulatory authority of the Commission pursuant to Sections 202(3) and 202(4) of the Energy Reorganization Act of 1974 (88 Stat 1244).\*

(k) "Indian Tribe" means an Indian tribe as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93-638).

~~[(k)]~~(i) "Important to safety," with reference to structures, systems, and components, means those structures, systems, and components that provide reasonable assurance that radioactive waste can be received, handled, and stored without undue risk to the health and safety of the public.

~~[(k)]~~(m) "Public Document Room" means the place at 1717 H Street NW., Washington, D.C., at which records of the Commission will ordinarily be made available for public inspection and any other place, the location of which has been published in the FEDERAL REGISTER, at which public records of the Commission pertaining to a particular geologic repository are made available for public inspection.

~~[(m)]~~(n) "Radioactive waste" means HLW and any other radioactive materials other than HLW that are received for emplacement in a geologic repository.

(o) "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

---

\* These are DOE "facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed under such act [the Atomic Energy Act]" and "Retrievable Surface Storage Facilities and other facilities authorized for the express purpose of subsequent long-term storage of high-level radioactive wastes generated by [DOE], which are not used for, or are part of, research and development activities."

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 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.

~~[(p) "Traceability" means the ability, through the use of container identification and preparation and maintenance of appropriate records, to delineate a step-by-step history of any radioactive waste.]~~

(p) "Tribal organization" means a Tribal organization as defined in the Indian Self-Determination and Education Assistance Act (Public Law 93-638).

#### §60.3 License required.

(a) The [Department] DOE shall not receive or possess 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) The [Department] DOE shall not commence construction of a geologic repository operations area unless it has filed an application with the Commission and has obtained construction authorization as provided in this part. Failure to comply with this requirement shall be grounds for denial of a license.

#### §60.4 Communications.

Except where otherwise specified, all communications and reports concerning the regulations in this part and applications filed under them

should be addressed to the Director of Nuclear Material Safety and Safeguards, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555.

Communications, reports, and applications may be delivered in person at the Commission's offices at 1717 H Street NW., Washington, D.C., or 7915 Eastern Avenue, Silver Spring, Maryland.

#### §60.5 Interpretations.

Except as specifically authorized by the Commission, in writing, no interpretation of the meaning of the regulations in this part by any officer or employee of the Commission other than a written interpretation by the General Counsel will be considered binding upon the Commission.

#### §60.6 Exemptions.

The Commission may, upon application by the [Department] DOE, any interested person, or upon its own initiative, grant such exemptions from the requirements of the regulations in this part as it determines are authorized by law, will not endanger life or property or the common defense and security, and are otherwise in the public interest.

#### §60.7 License not required for certain preliminary activities.

The requirement for a license set forth in §60.3(a) of this part is not applicable to the extent that the DOE receives and possesses source, special nuclear, and byproduct material at a geologic repository:

(a) For purposes of site characterization; or

(b) For use, during site characterization or construction, as components of radiographic, radiation monitoring, or similar equipment or instrumentation.

Subpart B - Licenses  
Preapplication Review

§60.11 Site characterization report.

(a) As early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization, the [Department] DOE shall submit to the Director a site characterization report. The report shall include ~~[(i)]~~(1) a description of the site~~(s)~~ to be characterized; ~~[(ii)-a-description-of-the-site characterization-program-including-extent-of-planned-excavations;-plans for-in-situ-testing;-investigation-activities-which-may-affect-the-ability-of-the-site-to-isolate-wastes;-and-provisions-to-control-any adverse;-safety-related-impacts-from-site-characterization-including appropriate-quality-assurance-programs;-~~~~(iii)]~~ (2) the criteria used to arrive at the candidate area~~(s)~~; ~~[(iv)]~~ (3) the method by which the site~~(s)~~ was selected for site characterization; ~~[(v)]~~(4) identification and location of alternative media and sites at which the DOE intends to conduct site characterization and for which the DOE anticipates submitting subsequent site characterization reports; ~~[(vi)]~~(5) a description of the decision process by which the site~~(s)~~ was selected for characterization, including the means used to obtain public, Indian tribal and State views during selection; ~~[and-(vii)-any-issues-related]~~ (6) a description of the site characterization program including (i) the extent of any planned excavation, any plans for in situ testing, (ii) a conceptual design of a repository appropriate to the named site in sufficient detail to allow assessment of the site characterization program with respect to investigation activities which address the ability of the site to host a

repository and isolate radioactive waste, or which may affect such ability,  
and (iii) provisions to control any adverse, safety-related effects from  
site characterization including appropriate quality assurance programs; (7)  
a description of the quality assurance program to be applied to data collec-  
tion; and (8) any issues related to the site selection, alternative candidate  
areas or sites, or design of the geologic repository operations area  
 which the [Department] DOE wishes the NRC staff to review. [~~The Depart-~~  
~~ment may include multiple sites in a single site characterization report.~~]  
 Also included shall be a description of the research and development  
 activities being conducted by the [Department] DOE which deal with the waste  
 form[s] and packaging which may be considered appropriate for the site[s]  
 to be characterized, including research planned or underway to evaluate  
 the performance of such waste forms.

(b) The Director shall cause to be published in the FEDERAL REGISTER  
 a notice that the information submitted under paragraph (a) of this sec-  
 tion has been received and that a staff review of that information has  
 begun. The notice shall identify the site[~~s~~] selected for site charac-  
 terization and alternate areas considered by the DOE and shall advise that  
 consultation may be requested by State and local governments and Tribal  
organizations in accordance with Subpart C of this part. [~~§-60-61~~]

(c) The Director shall make available a copy of the above information  
 at the Public Document Room. The Director also shall transmit copies and  
 the published notice of receipt thereof to the Governor and legislature of  
 the State and to the chief executive of the municipality in which a site  
 to be characterized is located (or if it is not located within a munici-  
 pality, then to the chief executive of the county, or to the Tribal organ-  
ization if it is to be located within an Indian reservation) and to the  
 Governors of any contiguous States.



(d) The Director shall prepare a draft site characterization analysis which shall discuss the items cited in paragraph (a) of this section. The Director shall publish a notice of availability of the draft site characterization analysis and a request for comment in the Federal Register. Copies shall be made available at the Public Document Room. The Director shall also transmit copies to the Governor and legislature of the State and the chief executive of the municipality in which a site to be characterized is located (or if it is not located within a municipality, then to the chief executive of the county, or to the Tribal organization if it is to be located within an Indian reservation) and to the Governors of any contiguous States.

(e) A reasonable period, not less than ~~[60-days]~~ 90 days, shall be allowed for comment on the draft site characterization analysis. The Director shall then prepare a final site characterization analysis which shall take into account comments received and any additional information acquired during the comment period. Included in the final site characterization analysis shall be either an opinion by the Director that he has no objection to the ~~[Department's]~~ DOE's site characterization program, if such an opinion is appropriate, or specific objections of the Director to the ~~[Department's]~~ DOE's proceeding with characterization of the named site(s)]. In addition, the Director may make specific recommendations to the ~~[Department]~~ DOE on the matters pertinent to this section.

(f) Neither issuance of a final site characterization analysis nor the opinion by the Director shall constitute a commitment to issue any authorization or license or in any way affect the authority of the Commission, the Atomic Safety and Licensing Appeal Board, Atomic Safety and

Licensing Boards, other presiding officers, or the Director, in any proceeding under Subpart G of Part 2 of this chapter. If the [Department] DOE prepares an environmental impact statement with respect to site characterization activities proposed for a particular site, it should consider NRC's site characterization analyses before publishing its final environmental impact statement with respect to site characterization activities proposed for that particular site.

(g) During site characterization, the [Department] DOE should inform the Director by semiannual report of the progress of the site characterization and waste form research and development. ~~[including-schedules-as-appropriate:]~~ The semiannual reports should include the results of site characterization studies, the identification of new issues, plans for additional studies to resolve new issues, elimination of planned studies no longer necessary, identification of decision points reached and modification to schedules where appropriate. Also reported should be the DOE's progress in developing the design of a geologic repository operations area appropriate for the site being characterized, noting when key design parameters or features which depend upon the results of site characterization will be established. During this time, NRC staff ~~[should-]~~ shall be permitted to visit and inspect the site~~(s)~~ and observe excavations, borings, and in situ tests as they are done. ~~[inasmuch-as-these-site-characterization-activities-could-have-adverse-impact-upon-site-safety;-failure-by-the-Department-to-involve-the-Commission-in-the-manner-described-here-and-to-accommodate-the-recommendations-of-the-Director-could-result-in-denial-of-the-subsequent-license-application:]~~

(h) The Director may respond from time to time in writing to the [Department] DOE, expressing his current views on questions raised in the semiannual reports referred to above. Comments received from States in accordance with §60.61 shall be considered by the Director in formulating his views. All correspondence between the [Department] DOE and the NRC including the reports cited in paragraph (g) shall be placed in the Public Document Room.

(i) The activities described in paragraphs (a) through (h) above constitute informal conference between a prospective applicant and the staff, as described in §2.101(a)(1) of this chapter, and are not part of a proceeding under the Atomic Energy Act of 1954, as amended.

#### License Applications

##### § 60.21 Content of application.

(a) An application shall consist of general information and a safety analysis report. An environmental report shall be prepared in accordance with Part 51 of this chapter and shall accompany the application. Any Restricted Data or National Security Information shall be separated from unclassified information.

(b) The general information shall include:

(1) A general description of the proposed geologic repository identifying the [~~proposed-site~~] location of the geologic repository operations area, the general character of the proposed activities, and the basis for the exercise of licensing authority by the Commission.

(2) Proposed schedules for construction, receipt of waste, and emplacement of wastes at the proposed geologic repository operations area.

(3) A certification that the [Department] DOE will provide at the geologic repository operations area such safeguards as it requires at comparable surface facilities (of the DOE) to promote the common defense and security.

(c) The safety analysis report shall include:

(1) A description and analysis of the site at which the proposed geologic repository operations area is to be located with appropriate attention to those features that might affect facility design and performance. The assessment shall contain an analysis of the geology, geophysics, hydrology, geochemistry, and meteorology of the site and the major design structures, systems, and components, both surface and subsurface, that bear significantly on the suitability of the geologic repository for disposal of radioactive waste. It will be assumed that operations at the geologic repository operations area will be carried out at the maximum capacity and rate of receipt of radioactive waste stated in the application.

(2) A description and discussion of the design, both surface and subsurface, of the geologic repository operations area including: (i) the principal design criteria and their relationship to any general performance objectives promulgated by the Commission, (ii) the design bases and the relation of the design bases to the principal design criteria, (iii) information relative to materials of construction (including geologic media, general arrangement, and approximate dimensions), and (iv) codes and standards that the [Department] DOE proposes to apply to the design and construction of the geologic repository operations area.

(3) A description and analysis of the design and performance requirements for structures, systems, and components of the geologic repository

which are important to safety. The analysis and evaluation shall consider (i) the margins of safety under normal conditions and under conditions that may result from anticipated operational occurrences, including those of natural origin; (ii) the adequacy of structures, systems, and components provided for the prevention of accidents and mitigation of the consequences of accidents, including those caused by natural phenomena; and (iii) the effectiveness of engineered and natural barriers, including barriers that may not be themselves a part of the geologic repository operations area, against the release of radioactive material to the environment.

(4) A description of the quality assurance program to be applied to the design, fabrication, inspection, construction, testing, and operation of the structures, systems, and components of the geologic repository operations area important to safety.\*

(5) A description of the kind, amount, and specifications of the radioactive material proposed to be received and possessed at the geologic repository operations area.

(6) An identification and justification for the selection of those variables, conditions, or other items which are determined to be probable subjects of license specifications. Special attention shall be given to those items that may significantly influence the final design.

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\* The criteria in Appendix B of Part 50 of this chapter will be used by the Commission in determining the adequacy of the quality assurance program.

(7) A description of the program for control and monitoring of radioactive effluents and occupational radiation exposures to maintain such effluents and exposures in accordance with the requirements of Part 20 of this chapter.

(8) A description of the controls that the applicant will apply to restrict access and to regulate land use at the geologic repository operations area and adjacent areas.

(9) Plans for coping with radiological emergencies at any time prior to completion of decommissioning the geologic repository operations area.

(10) A description of the nuclear material control and accounting program.

(11) A description of design considerations that are intended to facilitate decommissioning of the facility.

(12) A description of plans for retrieval and alternate storage of the radioactive wastes should the geologic repository prove to be unsuitable for disposal of radioactive wastes.

(13) An identification of the natural resources at the site, the exploitation of which could affect the ability of the site to isolate radioactive wastes.

~~(13)~~(14) An identification of those structures, systems, and components of the geologic repository, both surface and subsurface, which require research and development to confirm the adequacy of design. For systems, structures, and components important to safety, the DOE shall provide a detailed description of the programs designed to resolve safety questions, including a schedule indicating when these questions will be resolved.

~~(14)~~(15) The following information concerning activities at the geologic repository operations area:

(i) The organizational structure of the [Department] DOE, offsite and onsite, including a description of any delegations of authority and assignments of responsibilities, whether in the form of regulations, administrative directives, contract provisions, or otherwise.

(ii) ~~[Managerial and administrative controls]~~ The quality assurance program to be used to ensure safety.

(iii) Identification of key positions which are assigned responsibility for safety at and operation of the geologic repository operations area.

(iv) Personnel qualifications and training requirements.

(v) Plans for startup activities and startup testing.

(vi) Plans for conduct of normal activities, including maintenance, surveillance, and periodic testing of structures, systems, and components of the geologic repository operations area.

(vii) Plans for decommissioning.

(viii) Plans for any uses of the geologic repository operations area for purposes other than disposal of radioactive wastes, with an analysis of the effects, if any, that such uses may have upon the operation of the structures, systems, and components important to safety.

§ 60.22 Filing and distribution of application.

(a) An application for a license to receive and possess source, special nuclear, or byproduct material in a geologic repository at a site which has been characterized, and an accompanying environmental report, and any amendments thereto, shall be filed in triplicate with the Director and shall be signed by the Secretary of Energy or his authorized representative.

(b) Each portion of such application and environmental report and any amendments shall be accompanied by 30 additional copies. Another 120 copies shall be retained by the [Department] DOE for distribution in accordance with written instructions from the Director or his designee.

(c) The [Department] DOE shall, upon notification of the appointment of an Atomic Safety and Licensing Board, update the application and environmental report, eliminating all superseded information and serve them as directed by the board. In addition, at that time the [Department] DOE shall serve one such copy on the Atomic Safety and Licensing Appeal Panel. Any subsequent amendments to the application or environmental report shall be served in the same manner.

(d) At the time of filing of an application and environmental report, and any amendments thereto, one copy shall be made available in an appropriate location near the site of the proposed geologic repository (which shall be a public document room, if one has been established) for inspection by the public and updated as amendments to the application or environmental report are made. [This] An updated copy shall be produced at any public hearing on the application for use by any parties to the proceeding.

(e) The [Department] DOE shall certify that the updated copies of the application and environmental report, as referred to in paragraphs (c) and (d), contain the current contents of such documents submitted in accordance with the requirements of this part.

§ 60.23 Elimination of repetition.

In its application, environmental report, or site characterization report, the [Department] DOE may incorporate by reference information contained in previous applications, statements, or reports filed with



the Commission: PROVIDED, that such references are clear and specific and that copies of the information so incorporated are available in [each] the public document room located near the site of the proposed geologic repository.

§ 60.24 Updating of application and environmental report.

(a) The application and environmental report shall be as complete as possible in the light of information that is reasonably available at the time of [submission] docketing.

(b) The [Department] DOE shall update its application in a timely manner so as to permit the Commission to review, prior to issuance of a license:

(1) Additional geologic, geophysical, geochemical, hydrologic, meteorologic and other data obtained during construction.

(2) Conformance of construction of structures, systems, and components with the design.

(3) Results of research programs carried out to confirm the adequacy of designs.

(4) Other information bearing on the Commission's issuance of a license that was not available at the time a construction authorization was issued.

(c) The [Department] DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of a license, the environmental impacts of any substantial changes in the activities proposed to be carried out or any significant new information regarding the environmental impacts of activities previously proposed.

## Construction Authorization

## § 60.31 Construction authorization.

Upon review and consideration of an application and environmental report submitted under this part, the Commission may authorize construction if it determines:

(a) Safety: That there is reasonable assurance that the types and amounts of [~~wastes~~]radioactive materials described in the application can be received, possessed, and disposed of in a repository of the design proposed without unreasonable risk to the health and safety of the public. In arriving at this determination, the Commission shall consider whether:

(1) The [~~Department~~] DOE has described the proposed geologic repository including but not limited to (i) the geologic, geophysical, geochemical and hydrologic characteristics of the site; (ii) the kinds and quantities of radioactive waste to be received, possessed, stored, and disposed of in the geologic repository; (iii) the principal architectural and engineering criteria for the design of the geologic repository operations area; (iv) construction procedures which may affect the capability of the geologic repository to serve its intended function; and (v) features or components incorporated in the design for the protection of the health and safety of the public.

(2) The site and design comply with the criteria contained in Subparts E and F of this part.

(3) The [~~Department's~~] DOE's quality assurance program complies with the requirements of Subpart G of this part.

(4) The [~~Department's~~] DOE's personnel training program complies with the criteria contained in Subpart H of this part.

(5) The [Department's] DOE's emergency plan complies with the criteria contained in Subpart I of this part.

(6) The [Department's] DOE's proposed operating procedures to protect health and to minimize danger to life or property are adequate.

(b) Common defense and security: That there is reasonable assurance that the activities proposed in the application will not be inimical to the common defense and security.

(c) Environmental: That, after weighing the environmental, economic, technical and other benefits against environmental costs and considering [reasonable] available alternatives, the action called for is issuance of the construction authorization[-], with any appropriate conditions to protect environmental values.

§ 60.32 Conditions of construction authorization.

(a) A construction authorization shall include such conditions as the Commission finds to be necessary to protect the health and safety of the public, the common defense and security, or environmental values.

(b) The Commission [~~may, at its discretion,~~] will incorporate in the construction authorization provisions requiring the [Department] DOE to furnish periodic or special reports regarding: (1) progress of construction, (2) any site data obtained during construction which are not within the predicted limits upon which the facility design was based, (3) any deficiencies in design and construction which, if uncorrected, could adversely affect safety at any future time, and (4) results of research and development programs being conducted to resolve safety questions.

(c) A construction authorization shall be subject to the limitation that a license to receive and possess source, special nuclear, or

byproduct material at the geologic repository operations area shall not be issued by the Commission until (1) the [Department] DOE has updated its application as specified in §60.24, and (2) the Commission has made the findings stated in §60.41.

§60.33 Amendment of construction authorization.

(a) An application for amendment of a construction authorization shall be filed with the Commission fully describing any changes desired and following as far as applicable the format prescribed [~~for construction authorization-applications~~], in §60.21.

(b) In determining whether an amendment of a construction authorization will be approved, the Commission will be guided by the considerations which govern the issuance of the initial construction authorization, to the extent applicable.

License Issuance and Amendment

§60.41 Standards for issuance of a license.

A license to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area may be issued by the Commission upon finding that:

(a) Construction of the geologic repository operations area has been substantially completed in conformity with the application as amended, the provisions of the Atomic Energy Act, and the rules and regulations of the Commission. Construction may be deemed to be substantially complete for the purposes of this paragraph if the construction of (1) surface and interconnecting structures, systems, and components, and (2)

any underground storage space required for initial operation are substantially complete.

(b) The activities to be conducted at the geologic repository operations area will be in conformity with the application as amended, the provisions of the Atomic Energy Act and the Energy Reorganization Act, and the rules and regulations of the Commission.

(c) The issuance of the license will not be inimical to the common defense and security and will not constitute an unreasonable risk to the health and safety of the public.

(d) All applicable requirements of Part 51 have been satisfied.

§60.42 Conditions of license.

(a) A license issued pursuant to this part shall include such conditions, including license specifications, as the Commission finds to be necessary to protect the health and safety of the public, the common defense and security, and environmental values.

(b) Whether stated therein or not, the following shall be deemed conditions in every license issued:

(1) The license shall be subject to revocation, suspension, modification, or amendment for cause as provided by the Atomic Energy Act and the Commission's regulations.

(2) The [Department] DOE shall at any time while the license is in effect, upon written request of the Commission, submit written statements to enable the Commission to determine whether or not the license should be modified, suspended or revoked.

(3) The license shall be subject to the provisions of the Atomic Energy Act now or hereafter in effect and to all rules, regulations, and orders of the Commission. The terms and conditions of the license shall

be subject to amendment, revision, or modification, by reason of amendments to or by reason of rules, regulations, and orders issued in accordance with the terms of the Atomic Energy Act.

(c) Each license shall be deemed to contain the provisions set forth in Section 183 b-d, inclusive, of the Atomic Energy Act, whether or not these provisions are expressly set forth in the license.

§60.43 License specifications.

(a) A license issued under this part shall include license conditions derived from the analyses and evaluations included in the application, including amendments made before a license is issued, together with such additional conditions as the Commission finds appropriate.

(b) License conditions shall include items in the following categories:

(1) Restrictions as to the physical and chemical form and radioisotopic content of radioactive waste.

(2) Restrictions as to size, shape, and materials and methods of construction of radioactive waste packaging.

~~[(3)--Restrictions-as-to-the-location,-size,-configuration,-construction-and-physical-characteristics-(e.g.,-physical,-chemical-and-thermal-properties)-of-the-storage-medium.]~~

[(4)](3) Restrictions as to the amount of waste permitted per unit volume of storage space considering the physical characteristics of both the waste and the storage medium.

[(5)](4) Requirements relating to test, calibration, or inspection to assure that the foregoing restrictions are observed.

[(6)](5) Controls to be applied to restrict access and to avoid disturbance to the geologic repository operations area and adjacent areas.

~~(7)~~(6) Administrative controls, which are the provisions relating to organization and management, procedures, recordkeeping, review and audit, and reporting necessary to assure that activities at the facility are conducted in a safe manner and in conformity with the other license specifications.

§60.44 Changes, tests, and experiments.

(a)(1) Following authorization to receive and possess source, special nuclear, or byproduct material at a geologic repository operations area, the DOE may (i) make changes in the geologic repository operations area as described in the application, (ii) make changes in the procedures as described in the application, and (iii) conduct tests or experiments not described in the application, without prior Commission approval, provided the change, test, or experiment involves neither a change in the license conditions incorporated in the license nor an unreviewed safety question.

(2) A proposed change, test, or experiment shall be deemed to involve an unreviewed safety question if (i) the likelihood of occurrence or the consequences of an accident or malfunction of equipment important to safety previously evaluated in the application is increased, (ii) the possibility of an accident or malfunction of a different type than any previously evaluated in the application is created, or (iii) the margin of safety as defined in the basis for any license condition is reduced.

(b) The [Department] DOE shall maintain records of changes in the geologic repository operations area and of changes in procedures made pursuant to this section, to the extent that such changes constitute changes in the geologic repository operations area or procedures as described in the application. Records of tests and experiments carried out pursuant to paragraph (a) of this section shall also be maintained.

These records shall include a written safety evaluation which provides the basis for the determination that the change, test, or experiment does not involve an unreviewed safety question. The [Department] DOE shall prepare annually or at such shorter intervals as may be specified in the license, a report containing a brief description of such changes, tests, and experiments, including a summary of the safety evaluation of each. The [Department] DOE shall furnish the report to the appropriate NRC Regional Office shown in Appendix D of Part 20 of this chapter with a copy to the Director of Inspection and Enforcement, U.S. Nuclear Regulatory Commission, Washington, D.C. 20555. Any report submitted pursuant to this paragraph shall be made a part of the public record of the licensing proceedings.

§60.45 Amendment of license.

(a) An application for amendment of a license may be filed with the Commission fully describing the changes desired and following as far as applicable the format prescribed for license applications.

(b) In determining whether an amendment of a license will be approved, the Commission will be guided by the considerations that govern the issuance of the initial license, to the extent applicable.

§60.46 Particular activities requiring license amendment.

(a) Unless expressly authorized in the license, an amendment of the license shall be required with respect to any of the following activities:

(1) Any action which would make emplaced high-level radioactive waste irretrievable or which would substantially increase the difficulty of retrieving such emplaced waste.

(2) Dismantling of structures.



(3) Removal or reduction of controls applied to restrict access to or to avoid disturbance of the geologic repository operations area or adjacent areas.

(4) Destruction or disposal of records required to be maintained under the provisions of this part.

(5) Any substantial change to the design or operating procedures from that specified in the license.

(6) Decommissioning.

(b) An application for such an amendment shall be filed, and shall be reviewed, in accordance with the provisions of §60.45.

#### Decommissioning

§60.51 License amendment to decommission.

(a) The [Department] DOE shall submit an application to amend the license prior to decommissioning. The application shall consist of an update of the license application and environmental report submitted under §§60.21 and 60.22 including:

(1) A description of the program for post-decommissioning monitoring of the geologic repository.

(2) A detailed description of the measures to be employed--such as land use controls, construction of monuments, and preservation of records--to regulate or prevent activities that could impair the long-term isolation of emplaced waste within the geologic repository and to assure that relevant information will be preserved for the use of future generations.

(3) Geologic, geophysical, geochemical, hydrologic, and other site data that are obtained during the operational period pertinent to the long-term isolation of emplaced radioactive wastes.

(4) The results of test, experiments, and any other analyses relating to backfill of excavated areas, shaft sealing, waste interaction with emplacement media, and any other tests, experiments, or analysis pertinent to the long-term isolation of emplaced wastes within the geologic repository.

(5) Any substantial revision of plans for decommissioning.

(6) Other information bearing upon decommissioning that was not available at the time a license was issued.

(b) The [Department] DOE shall update its environmental report in a timely manner so as to permit the Commission to review, prior to issuance of an amendment, substantial changes in the decommissioning activities proposed to be carried out or significant new information regarding the environmental impacts of such decommissioning.

§60.52 Termination of license.

(a) Following decommissioning, the [Department] DOE may apply for an amendment to terminate the license.

(b) Such application shall be filed, and will be reviewed, in accordance with the provisions of §60.45 and this section.

(c) A license shall be terminated only when the Commission finds with respect to the geologic repository:

(1) That the final disposition of radioactive wastes has been made in conformance with the [Department's] DOE's plan, as amended and approved as part of the license.

(2) That the final state of the geologic repository operations area site conforms to the [Department's] DOE's decommissioning plans, as amended and approved as part of the license.

(3) That the termination of the license is authorized by law, including Sections 57, 62, and 81 of the Atomic Energy Act, as amended.

Subpart C - Participation by State Governments and  
Indian Tribes

§60.61 Site review.

(a) Upon publication in the FEDERAL REGISTER of a notice that the [Department] DOE has selected a site for site characterization, in accordance with §60.11(b), and upon the request of a State, the Director shall make available NRC staff to consult with representatives of State, Indian tribal and local governments to keep them informed of the Director's view on the progress of site characterization and to notify them of any subsequent meetings or further consultations with the [Department] DOE.

(b) Requests for consultation shall be made in writing to the Director.

(c) The Director also shall respond to written questions or comments from the State, Indian tribal and local governments as appropriate, on the information submitted by the [Department] DOE in accordance with §60.11 of this part. Copies of such questions or comments and their responses shall be made available in the Public Document Room and shall be transmitted to the [Department] DOE.

§60.62 Filing of proposals for State participation.

(a) Consultation under §60.61 may include, among other things, a review of applicable NRC regulations, licensing procedures, potential schedules, and the type and scope of State activities in the license review permitted by law. In addition, staff shall be made available to cooperate with the State in developing proposals for participation by the State.

(b) States potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may submit to the Director a proposal for State participation in the review of the site characterization report and/or license application. A State's proposal to participate may be submitted at any time prior to docketing of an application or up to 120 days thereafter.

(c) Proposals for participation in the review shall be signed by the Governor of the State submitting the proposal and shall at a minimum contain the following information:

(1) A general description of how the State wishes to participate in the review, specifically identifying those issues which it wishes to review.

(2) A description of material and information which the State plans to submit to the NRC staff for consideration in the review. A tentative schedule referencing steps in the review and calendar dates for planned submittals should be included.

(3) A description including funding estimates of any work that the State proposes to perform for the Commission, under contract, in support of the review.

(4) A description of State plans to facilitate local government and citizen participation.

(5) A preliminary estimate of the types and extent of impacts which the State expects should a geologic repository be located at the site in question.

(d) If the State desires educational or information services (seminars, public meetings) or other actions on the part of NRC, such as establishing additional public document rooms or employment or exchange of State personnel under the Intergovernmental Personnel Act, these shall be included with the proposal.

§60.63 Approval of proposals.

(a) The Director shall arrange for a meeting between the representatives of the State and the NRC staff to discuss any proposal submitted under §60.62(b), with a view to identifying any modifications that may contribute to the effective participation by the State.

(b) Subject to the availability of funds, the Director shall approve all or any part of a proposal, as it may be modified through the meeting described above, if he determines that:

(1) The proposed activities are suitable in light of the type and magnitude of impacts which the State may bear, and

(2) The proposed activities (i) will enhance communications between NRC and the State, (ii) will contribute productively to the license review, and (iii) are authorized by law.

(c) The decision of the Director shall be transmitted in writing to the Governor of the originating State. A copy of the decision shall be made available at the Public Document Room. If all or any part of a proposal is rejected, the decision shall state the reason for the rejection.

(d) A copy of all proposals received shall be made available at the Public Document Room.

§60.64 Participation by Indian tribes.

(a) Any Indian tribe which is potentially affected by siting of a geologic repository operations area at a site that has been selected for characterization may:

(1) Request consultation, as provided with respect to States under §60.61.

(2) Submit proposals for participation, as provided with respect to States under §60.62, except that such proposals shall be signed by the chief executive (or other specifically authorized representative) of the Tribal organization.

(b) The Director shall respond to such requests or proposal in the manner provided in this subpart, except that decisions under §60.63 shall be transmitted in writing to the chief executive (or other specifically authorized representative) of the Tribal organization.

(c) Any request or proposal under this section shall be accompanied by such documentation as may be needed to determine the eligibility of the Indian tribe or the specific authority of its representatives.

§60.65 Coordination.

The Director may take into account the desirability of avoiding duplication of effort in taking action on multiple proposals submitted pursuant to the provisions of this Subpart to the extent this can be accomplished without substantial prejudice to the parties concerned.

## Subpart D - Records, Reports, Tests, and Inspections

## §60.71 Records and reports.

(a) The [Department] DOE shall maintain such records and make such reports in connection with the licensed activity as may be required by the conditions of the license or by rules, regulations, and orders of the Commission as authorized by the Atomic Energy Act and the Energy Reorganization Act.

(b) Records of the receipt, handling, and disposition of radioactive waste at a geologic repository operations area shall contain sufficient information to assure [~~traceability~~] a complete history of the movement of the waste from the shipper through all phases of storage and disposal.

(c) The [Department] DOE shall promptly notify the Commission of each deficiency found in the site characteristics, and design and construction of the geologic repository which, were it to remain uncorrected, could (1) be a substantial safety hazard, (2) represent a significant deviation from the design criteria and design bases stated in the application, or (3) represent a significant deviation from the conditions stated in the terms of a construction authorization or the license, including license specifications. The notification shall be in the form of a written report, copies of which shall be sent to the Director and to the appropriate Nuclear Regulatory Commission Inspection and Enforcement Regional Office listed in Appendix [A-to-Part-73] D of Part 20 of this chapter.

## §60.72 Tests.

The [Department] DOE shall perform, or permit the Commission to perform, such tests as the Commission deems appropriate or are necessary

for the administration of the regulations in this part. These may include tests of (a) radioactive waste, (b) the geologic repository including its structures, systems, and components, (c) radiation detection and monitoring instruments, and (d) other equipment and devices used in connection with the receipt, handling, or storage of radioactive waste.

§60.73 Inspections.

(a) The [Department] DOE shall allow the Commission to inspect the premises of the geologic repository operations area and adjacent areas to which the [Department] DOE has rights of access.

(b) The [Department] DOE shall make available to the Commission for inspection, upon reasonable notice, records kept by the [Department] DOE pertaining to activities under this part.

(c)(1) The DOE shall upon request by the Director, Office of Inspection and Enforcement, provide rent-free office space for the exclusive use of the Commission inspection personnel. Heat, air conditioning, light, electrical outlets and janitorial services shall be furnished by DOE. The office shall be convenient to and have full access to the facility and shall provide the inspector both visual and acoustic privacy.

(2) The space provided shall be adequate to accommodate a full-time inspector, a part-time secretary and transient NRC personnel and will be generally commensurate with other office facilities at the site. A space of 250 square feet either within the site's office complex or in an office trailer or other on site space is suggested as a guide. For sites containing multiple facilities, additional space may be requested to accommodate additional full-time inspector(s). The office space that is provided shall be subject to the approval of the Director, Office of Inspection and Enforcement.



All furniture, supplies and communication equipment will be furnished by the Commission.

(3) DOE shall afford any NRC resident inspector assigned to that site, or other NRC inspectors identified by the Regional Director as likely to inspect the facility, immediate unfettered access, equivalent to access provided regular plant employees, following proper identification and compliance with applicable access control measures for security, radiological protection and personal safety.

PART 70 - DOMESTIC LICENSING OF SPECIAL NUCLEAR MATERIAL

~~[23-]~~25. 10 CFR 70.14 is amended by adding a subsection (c).

§70.14 Specific exemptions.

\* \* \* \* \*

(c) The [Department] DOE is exempt from the requirements of the regulations in this part to the extent that its activities are subject to the requirements of Part 60 of the chapter.

(Amendments to all parts issued pursuant to citations of authority presently codified or, in the case of 10 CFR Part 60, as proposed to be codified.)

Dated at Washington, D.C. this \_\_\_\_\_ day of \_\_\_\_\_, 1980.

For the U.S. Nuclear Regulatory Commission.

\_\_\_\_\_  
Samuel J. Chilk  
Secretary of the Commission

APPENDIX B

Comment letters on new Proposed 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60 and 70.

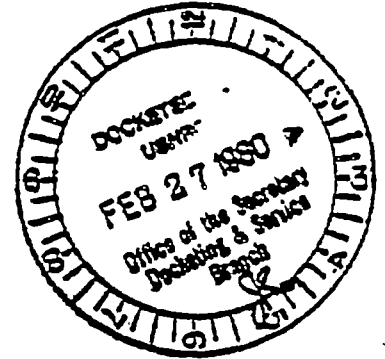


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DOCKET NUMBER  
PROPOSED RULE PR-2 et al  
(44 FR 70408)

February 21, 1980



Secretary of the Nuclear Regulatory Commission  
Washington, D.C. 20555

ATTENTION: Docketing and Service Branch

Dear Sir:

Following a recent discussion with Mr. Seth M. Coplan of the Nuclear Regulatory Commission, I have reviewed the Proposed Licensing Procedures for Disposal of High-Level Radioactive Wastes in Geologic Repositories, as they appeared in the Federal Register Vol. 44 No. 236, pp. 70408-70421, of Thursday, December 6th, 1979. I would like to comment as follows:

1. Multiplicity of sites for characterization

It will be necessary to essentially complete characterization of at least 3 sites before submitting a request for licensing of one of the sites as a repository. It could well arise that all the sites were found to be suitable for licensing as repositories, perhaps with varying levels of engineered barriers. In such an event it seems logical to license all suitable sites. This may be possible under the proposed regulations, but it is not clear whether, for example, 2 or more sites must be rejected for each one accepted. This would be an unnecessary restriction.

Considering the cost of repository excavation and exploration it should be noted that all U.S. commercial nuclear waste generated to the year 2000 could be accommodated in 2 national repositories. It should be noted that repositories found unacceptable or unnecessary for nuclear waste, although not ideally suited for alternative use, could possibly be put to good effect in other applications, e.g., strategic oil storage, pumped hydro-electric power, etc. In this way the cost of multiple site characterization may be reduced.

It may also be that a site originally intended as a large repository could be made acceptable if redesigned on a more modest scale, e.g., by the addition of engineered barriers.

The proposed regulations should not eliminate the above possibilities.

Acknowledged by card... 3/2... g...

2. Site characterization report

§60.11, p. 70416, "extent of planned excavations" should include a preliminary design of the repository. Knowledge of the proposed design would help indicate how the in situ testing program related to the repository layout, the susceptibility of the design to modifications in the event that the site characteristics were found to differ from expectations, and the opportunities for provision of additional engineered barriers.

3. License application

§60.21, p. 70417, (c)(1) " . . .The assessment shall contain an analysis of the geology, hydrology. . .etc." Presumably "meteorology" as used here relates to the possibility of meteorite impact at the site, rather than study of general weather conditions. It would seem advisable to include also "tectonic and volcanic history" (unless these are understood within the term "geology"). The same grouping of "geology, hydrology and meteorology" is used in other parts of the regulations.

(c)(3) "A description and analysis of the design and performance requirements. . .(iii) the effectiveness of engineered and natural barriers" should be defined to include the start of 'in-situ' demonstration of the effectiveness of proposed shaft-sealing and tunnel back-filling techniques. Such tests should be conducted for as long a period as possible, using in-situ test sections, prior to closure of the repository. In this way the efficacy of isolation of the filled repository from the biosphere can be given the fullest possible test, prior to the request for decommissioning (§60.51, (a)(4), p. 70420).

4. General

Overall, the proposed regulations appear to provide a prudent procedure for the development of safe permanent repositories for high level radioactive waste isolation.

Yours sincerely,



Charles Fairhurst  
Professor and Head

CF:dt

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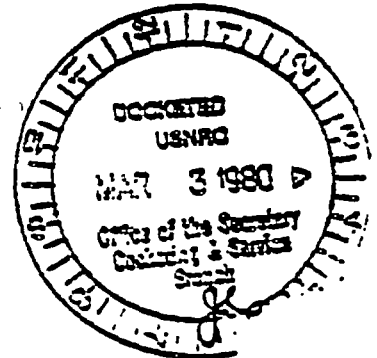
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DOCKET NUMBER  
PROPOSED RULE PR-2 et al  
(44 FR 70408)

ROBERT LOWENSTEIN  
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PETER S. FLYNN  
WILLIAM J. FROSTEN  
FREDERIC L. GOOP  
DOUGLAS G. GREEN

March 3, 1980



Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch

Re: Disposal of High-Level Radioactive  
Wastes in Geologic Repositories;  
Proposed Licensing Procedures  
10 CFR Parts 2, 19, 20, 21, 30, 40,  
51, 60, 70  
44 F.R. 70408 (December 6, 1979)

Dear Sir:

In response to the Commission's request for comments on its proposed procedural rule for licensing of disposal of high-level radioactive wastes in geologic repositories, we are pleased to submit the following comments on behalf of the Utility Waste Management Group (UWMG)\* and the Edison Electric Institute (EEI).

\*/ Arizona Public Service Company; Boston Edison Company; Commonwealth Edison Company; Consolidated Edison Company, Inc.; Department of Water & Power, City of Los Angeles; Duke Power Company; Florida Power & Light Company; Georgia Power Company; Houston Lighting & Power Company; Illinois Power Company; Iowa Electric Light & Power Company; Long Island Lighting Company; Nebraska Public Power District; Northeast Utilities Service Company; Pacific Gas & Electric Company; Portland General Electric Company; Power Authority of the State of New York; Sacramento Municipal Utility District; Virginia Electric & Power Company; Yankee Atomic Electric Company.

Acknowledged by card. 3/7/80

Secretary of the Commission  
Page Two  
March 3, 1980

The Commission's proposed rule supersedes the proposed General Statement of Policy it had published on November 17, 1978 (43 F.R. 53869-72). In the UWMG's January 16, 1979, comments we pointed out that the Commission has statutory flexibility to fashion specific procedures for the licensing of repositories tailored to the particular activities and hazards involved; and we stressed that the Commission has the obligation, as well as the opportunity, to develop procedures which assure that decisions relating to the Federal waste management program are reached in timely fashion in the appropriate forum without duplicative and unnecessary environmental reviews. We indicated that there was a great deal in the procedures with which we agreed, but that the proposed policy did not seem to take into account fully that NRC licensing was only one aspect of an overall Federal program. We were concerned that the proposed licensing approach did not appropriately reflect the basic importance of the steps that the Department of Energy (DOE) will be taking nor did it reflect an appropriate allocation of responsibilities and decision-making between the two agencies.

Now that the Commission has proposed its more detailed licensing procedures, there continues to be a great deal in the Commission's approach with which we agree. Moreover, we heartily endorse the change in the Commission's approach which would eliminate the formal step of "provisional construction authorization" and permit site characterization work (including work "at depth") to be performed in advance of the filing of an application.\*

However, some of the concerns we have previously expressed persist, and some new questions have arisen in light of the detailed requirements that first appear in the proposed rule.

The views and recommendations of UWMG and EEI on all of these matters are set forth below.

Duplicative Review of  
DOE's Programmatic Decisions

For reasons that were set forth at some length in the UWMG's January 16, 1979, comments we urged that programmatic decisions

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\*/ As set forth later in these comments, we do not agree that such site characterization work should be mandated at all alternative sites. (Pages 4-5, infra.) In addition, we believe that the scope of the permitted shaft work should be expanded to include such work as DOE deems necessary or desirable. (Pages 5-6, infra.)

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reached by DOE in accordance with NEPA should not be subject to unnecessary duplicative review in a subsequent licensing proceeding." For example, we recommended that the Commission's policy and regulations should assure that its licensing proceedings not reexamine DOE's programmatic decisions on the objectives, structure and timing of the overall DOE program for the management of solidified high level wastes or spent fuel.

The Commission appears to defer acting on the UWMG's recommendation by stating that the proposed rule does not explicitly address the NEPA responsibilities of the Commission regarding matters within the scope of DOE's generic environmental impact statement on the management of commercially generated wastes (the "GEIS"). 44 F.R. 70408. The Commission indicates that the possibility of adopting DOE's GEIS may be considered at an appropriate time. Id.

We do not quarrel with the notion that the Commission can defer some aspects of consideration of the impact of the GEIS on the Commission's program until the final GEIS is issued.\*\* But in our view, the Commission's proposed rule fails to reflect appropriate consideration of the deference that should be given to DOE's programmatic decisions -- regardless of the precise decisions reached by DOE on the basis of the GEIS. Specifically, we believe that the Commission should not dictate either in the proposed rule or in the accompanying statement of considerations the number of alternative sites or media that DOE should explore. As the Commission is well aware, in his Message to Congress of February 12, 1980, the President, pending final decisions under NEPA, adopted an interim planning strategy under which DOE will investigate a number of potential repository sites in a variety of different geologic environments with diverse rock types. When four to five sites have been evaluated, one or more will be selected for further development as a licensed full-scale repository. Following completion of the GEIS, the President will reexamine this interim strategy and decide whether any changes need to be made. DOE will also prepare by 1981 and update biannually a National Plan for

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\*/ Our comments set forth the detailed legal basis for avoidance of duplicative reconsideration of programmatic decisions citing, inter alia, Scientists Institute for Public Information v. AEC, 481 F.2d 1079 (D.C. Cir. 1973); Energy Research and Development Administration, et al., (Clinch River Breeder Reactor Plant), CLI-76-13, 4 NRC 67, 73 (1976), and the then recently adopted CEQ regulations (40 CFR §§ 1502.4, 1502.20). To avoid repetition of that discussion, we simply incorporate it by reference.

\*\*/ DOE has indicated that the final GEIS may be issued this fall.

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Nuclear Waste Management. Both the interim strategy and any changes thereto will, of course, be subject to Congressional review processes.

DOE's ultimate determination -- subject to the foregoing Presidential and Congressional reviews -- as to the number of sites and number of media it will investigate prior to selection of the first repository site "are the very paradigm" of those entrusted to DOE under its authority to manage the Nation's defense and commercial radioactive wastes. The Commission should avoid directly or indirectly appearing to dictate the minimum number of sites and media that DOE will investigate -- otherwise it will improperly place itself "in the position of scrutinizing afresh" the judgments on program development made by the agency to which such judgments were primarily confided.\*

In discussing the proposed rule, the Commission states that it anticipates that DOE will characterize a minimum of three sites representing a minimum of two geologic media and that it fully expects DOE to submit a wider range of alternatives than the minimum suggested. 44 F.R. 70411. Although at this time the Commission's expectations appear to be fully consistent with DOE's program, this does not remedy the basic flaw in the Commission's approach. The Commission's expectations simply have no place as part of the regulatory scheme. The scope and timing of DOE's consideration of alternative sites and media may change because of any number of policy considerations; such programmatic developments should not be impeded by a regulatory requirement that improperly deals with programmatic decisions.

#### Scope of Information on Alternative Sites

In addition to our disagreement with the possibility that the Commission may seek to dictate the number of sites and media to be investigated by DOE, we also disagree with the Commission's indication that exploration "at depth" will be necessary at the alternative sites. 44 F.R. 70409.

Until the technical requirements of Part 60 are developed, it is highly premature to judge that exploration "at depth" will be needed to satisfy such requirements.

Even when the requirements are known, however, the Commission's regulations should not prejudge or dictate how DOE should obtain the necessary information. The regulations should describe the type of information required, and allow DOE to determine how it can most effectively comply. Surely if DOE could develop the required information from existing records

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\*/ See Clinch River, supra, 4 NRC at 83.



Secretary of the Commission  
Page Five  
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or from data available at an adjacent site or elsewhere within the region, the Commission should not mandate investigations "at depth" for their own sake.

We should emphasize that we concur fully in the thrust of the Commission's proposed rules that would permit site characterization work (including excavation of exploratory shafts and limited subsurface lateral excavations and borings) prior to the filing of an application and the obtaining of construction authority. We agree that the obtaining of information "at depth" with respect to the site for which a license is sought may be important prior to a formal licensing decision, and we do not believe there is any countervailing significant consideration that should impede DOE's ability to obtain such information before a formal licensing proceeding is held. However, we seriously doubt that such information is necessary for purposes of a comparison of alternative sites,\* and we believe that the Commission should not require that it be obtained.

It is possible that the Commission seeks to require DOE to perform work "at depth" at alternative sites in order to avoid the appearance of a premature commitment by DOE if it sinks a shaft at only a single site. 44 F.R. 70410. We believe such concern is unwarranted. DOE is entrusted with important responsibilities and is subject to a multiplicity of reviews, including those by Congress. There is no reason to expect that it will not carry on its site selection activities properly. It should not be subjected to arbitrary delays and expenditures for work that may not be required to characterize a particular site.

In this connection, we also believe that the regulation should provide that, as part of authorized site characterization work, the permitted "exploratory shaft" can include shaft work to the extent deemed necessary or desirable by DOE. If, for example, at a particular site, DOE determines that a large

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\*/ In reactor licensing, the Commission has explicitly recognized that it is not necessary for purposes of site comparison that the applicant develop as much information concerning alternative sites as it has developed for the proposed site. Public Service Company of New Hampshire (Seabrook Station, Units 1 and 2), CLI-77-8, 5 NRC 503, 529 (1977). The Commission pointed out that requiring such intensive analysis of alternative sites would involve unconscionable costs which should not be imposed in the absence of a mechanism that "would permit banking of any sites which might be previously approved." Id. Since such "banking" mechanism is equally unavailable for repository sites, the foregoing argument is similarly applicable to repository licensing.

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exploratory shaft or expanded work associated with the shaft (work comparable in magnitude to a main shaft) would obviate the time and expense later required to expand or seal the shaft, the regulation should enable DOE to take what it considers to be the most effective action.

Standard for Commission's Action  
Under NEPA

The proposed regulation states that the Commission may authorize construction if it determines, as to environmental matters, "That, after weighing the environmental, economic, technical and other benefits and considering reasonable alternatives, the action called for is issuance of the construction authorization." (Proposed § 60.31(c)) In the Supplementary Information, the Commission indicates that it will authorize construction if it "finds after considering reasonable alternatives that the benefits of the proposal exceed the costs under NEPA. . . ." 44 F.R. 70411.

Although these iterations are similar to the approach employed in the issuance of other licenses by the Commission, in our view they are not properly applicable to the unique circumstances relevant to repository licensing.

First, we believe that a specific licensing proceeding is not the appropriate forum to compare the benefits of a repository to its costs. In our view, such overall balancing, if performed at all for regulatory purposes, should be done generically by the Commission as an amendment to the regulations after it adopts the substantive requirements applicable to repository licensing. We take this position because we believe that such balancing involves essentially policy judgments which the Commission would be better able to make than a licensing board and that relegating such decision to a licensing proceeding could unnecessarily complicate and protract such proceeding. In the case of all repositories the benefits will be the same, i.e., the fulfilling of the Federal Government's responsibility for the management of the Nation's defense and commercial wastes. Such benefits are unquantifiable, and certainly not measurable in terms which can be balanced simply against costs in a proceeding involving a single repository. The costs and impacts of a repository which satisfies the Commission's forthcoming substantive requirements -- otherwise it would not be licensed -- can be generically bounded by the Commission. Thus, there is no reason why the Commission should not reach the decision generically, instead of subjecting a specific licensing proceeding to the potential delays and complexities associated

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Page Seven  
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with adjudicatory determinations of a basic policy question.\*

This does not mean that the specific environmental costs or impacts of particular sites, designs or methods of operation could not be considered in the licensing proceeding. Such information would be used in evaluating whether improvements to minimize specific environmental impacts should be required as a license condition, and would also be used in comparing sites to determine that an alternative under consideration is not obviously superior. But such information would not be used for an overall balancing of benefits versus costs in an inappropriate forum.

Second, the regulation should make clear that only alternative sites proposed by DOE would be compared. For reasons discussed above, the scope and timing of DOE's investigation of alternative sites and media are basic programmatic decisions which should not be reexamined in the licensing process. Such decisions could be utterly frustrated and the licensing process subjected to extraordinary delays, if determined opponents were permitted to engage in endless debate concerning the unlimited number of sites throughout the country which might ultimately also be proven suitable for a repository.

Similarly the regulation should make clear that there would be considered only repository-related technology\*\* would be reasonably available by the time the repository is expected to be operational.\*\*\* Proceedings could be unnecessarily protracted if they were permitted to encompass discussion of future technology not available for application in the scheduled time frame for implementation of the repository program. If the technology proposed by DOE satisfies the Commission's

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\*/ If, notwithstanding our recommendation, the Commission determines that the overall balancing should be relegated to the licensing proceeding, the regulations should be modified to make clear how the benefits of the repository are to be measured and to provide explicit guidance to licensing boards as to how the balancing is to be performed.

\*\*/ Our comments presuppose that disposal methodologies other than repositories would not be considered in a proceeding under Part 60. The Commission indicated it will consider alternative technologies later (44 F.R. 70411), but obviously any such consideration should be in a generic proceeding and not within the framework of a proceeding involving a specific repository license application.

\*\*\*/ In other words, the proceeding should not engage in crystal-ball speculation concerning future waste forms, packaging, repository designs, engineered barriers, etc.

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substantive requirements, it should only be compared to other available repository technology and needless speculation should be avoided concerning the benefits of improvements that will not become available until the distant future.

Information To Be Included  
in an Application

As in the case of reactor licensing, the proposed regulation contemplates that a construction authorization will be issued prior to construction and that an operating license will be issued prior to operation of the repository. The regulations applicable to construction permits for reactors recognize that to make the decisions pertinent to authorizing construction it is not necessary to have available final information concerning all aspects of facility design, construction and operation. Thus the regulations permit the applicant to file an application at the construction permit stage (the preliminary safety analysis report) which contains "preliminary" information on such subjects as design of the facility, analysis and evaluation of the facility's design and performance, plans for the applicant's organization, training of personnel and conduct of operations, and plans for coping with emergencies. 10 CFR § 50.34(a). The regulations then require final such information to be filed in the application for an operating license (the final safety analysis report). 10 CFR § 50.34(b).

The proposed repository regulation concerning the contents of the application for a construction authorization, however, does not use the adjective "preliminary" in describing any of the information to be submitted. (Proposed § 60.21(b)). Thus, it appears that prior to the issuance of a construction authorization "final" information must be submitted even with respect to such subjects as design of the facility, the quality assurance program for operations, plans for coping with emergencies, plans for decommissioning, etc. The only concession that some information might properly be less than final appears in another section which states, somewhat ambiguously, that the application "shall be as complete as possible in the light of information that is reasonably available at the time of submission." (Proposed § 60.24(a))

We can appreciate that the Commission would prefer to reach its judgments, even at the construction stage, on the basis of final and complete information. However, it should be recognized that until construction is authorized (including the approval of specific design criteria and design bases) refinement of design can be a wasteful and needless exercise, and that many aspects of design and operation can be more suitably

Secretary of the Commission

Page Nine

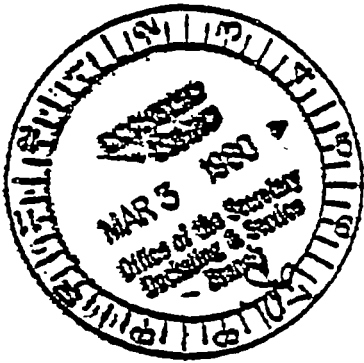
March 3, 1980

determined during construction than prior thereto. We therefore suggest that the Commission modify § 60.21(b) to identify those items of technical information which can properly be submitted in preliminary form without affecting the Commission's ability to reach an appropriate decision on construction authorization.

Respectfully submitted,

UTILITY WASTE MANAGEMENT GROUP  
EDISON ELECTRIC INSTITUTE

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③

March 3, 1980

DOCKET NUMBER

PROPOSED RULE

PR-2666  
(44FR 70408)

Secretary of the Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch

The Environmental Policy Institute makes the following comments concerning the Commission's Proposed Rule on Disposal of High Level Radioactive wastes in Geologic Repositories: Proposed Licensing Procedures (44 F. R. 70408, December 6, 1980):

The Environmental Policy Institute endorses, in principle, the licensing procedures outlined in the proposed rule. These new procedures address many of the problems we found with the November, 1978 General Statement of Policy regarding early site activities. Specifically, the Institute endorses the concept, and substance, of the "site characterization" requirement contained in Sec. 60.11 of the proposed rule. We also agree with the proposed series of licensing steps: a construction authorization (Sec. 60.31), a repository license (sec. 60.41), a decommissioning amendment (Sec. 60.51) and a license termination review (Sec. 60.52).

The proposed rule is deficient, however, in several key respects and continues to reflect the overly passive approach of the Commission to dealing with the Department of Energy program which we criticized in the 1978 General Statement of Policy.

First, much is made in the Notice of the Commission's intent to require DOE to characterize several sites before construction will be authorized. Nowhere in the rule, however, is there any requirement for multiple characterizations. Such a requirement is most notably absent from Sec. 60.21 "Content of Application" which should explicitly require characterization of multiple sites and the degree to which these characterizations must be described and comparable with one another. Since this section establishes the fundamental requirements for licensing, and since the NRC intends to maintain an "informal" prelicensing relationship with DOE concerning site selection activities, it is essential that a specific multiple site requirement be included in the first "formal" stage outlined in Sec. 60.21.

Second, "Construction Authorization" (Sec. 60.31) is not dependent upon any finding that the best site, to say nothing of the best site

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among those characterized, be selected. While there is a recognition that the construction authorization, as envisioned by the Commission, is a complex process and extends beyond the issue of site suitability, DOE has embarked upon a "systems approach" to repository development wherein the site decision cannot be removed from the other components of a repository development. Similarly, choice of a site represents a fundamental decision in many respects on a repository technology. To omit a "best available site" determination from Sec. 60.31 "Construction Authorization" is a serious flaw especially in light of DOE's penchant for developing sites of convenience on its own reservations.

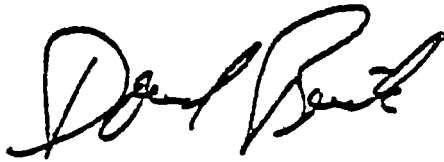
Third, the NRC continues to adopt an overly passive approach to the fundamental issue of technology selection. The Commission has not put any teeth into its licensing procedures that would allow it to cull out inadequate DOE repository technologies either in terms of types of geologic media or waste forms. While the Notice implies that the NRC will, at a minimum, permit DOE to develop only the best of several characterized sites, the proposed rule contains no such requirement. The NRC proposes to oversee the DOE waste form development program, but does not intend to specifically license waste forms. The Commission proposes to oversee the DOE's site selection program, but does not require that DOE in fact even have such a program. Rather, NRC assumes that the sites DOE has chosen to characterize have resulted from a careful and thorough selection process. DOE's interest in the WIPP site at Carlsbad, New Mexico, the Nevada Test Site, and the Hanford Reservation do not reflect site choices based upon a technical site selection process.

The Commission is not, as the Notice points out, licensing nuclear reactors under this proposed rule. It is licensing a completely undeveloped technology in which every repository is a generically new facility. To this end, the NRC licensing process should be based upon a defense-in-depth approach requiring DOE to find and develop the best site, the best waste form, the best repository design. The proposed rule does not establish these minimum requirements.

The "Other Reviews" referred to in the Notice (44 F.R. 70412) concerning site screening and waste form should be formalized. They are not merely programmatic decisions by the DOE but represent critical elements of a waste repository and certainly basic elements of a defense-in-depth approach. The Site Characterization Report preparation should not be defined as an "informal conference between the prospective applicant and the staff" (Sec. 60.11). We cannot agree with the Commission's unqualified assurances that the opportunities for public participation and

staff review provide an acceptable process for review of DOE's site characterization program. NRC's argument that multiple site characterizations would nullify the value of a hearing process is irrelevant given the lack of requirements that such characterizations will in fact occur. We request that the NRC propose procedures under 10CFR Part 2, Subpart F for review of the DOE site characterization report.

Respectfully,

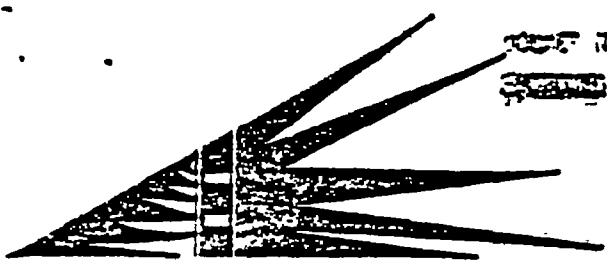
A handwritten signature in black ink, appearing to read "David Berick". The signature is fluid and cursive, with the first name "David" being more prominent than the last name "Berick".

David Berick  
Director  
Nuclear Waste Project



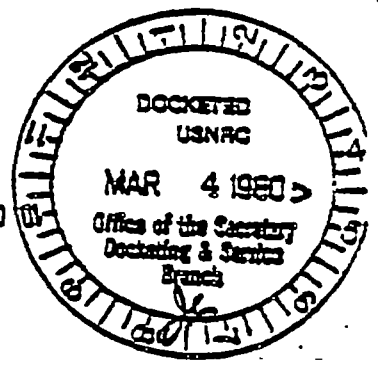
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- 2 sheets  
(44 FR 70408)



**SOUTHWEST RESEARCH AND INFORMATION CENTER**

February 28, 1980



Secretary of the Nuclear Regulatory Commission  
Washington, D.C. 20555  
Attn: Docketing and Service Branch

RE: Comments on Proposed rule for Disposal of High-Level Radioactive Wastes in  
Geologic Repositories; Proposed Licensing Procedures

Dear Secretary of the NRC:

This is to reserve our final comments on this proposed rule. Since we did not receive a copy of the proposed rule until February, we will not finish our comments until next week. They will be mailed on or about March 3, but you will not receive them until a few days thereafter. Because of our interest and involvement with nuclear waste disposal issues, we do want to officially comment, however.

Our major concerns are in three areas: site characterization, consultation and concurrence with states and public participation.

Regarding site characterization, our detailed experience with the proposed WIPP site in New Mexico is that site characterization has not been properly defined in §60.2 (n). Specifically, there has apparently not been adequate consideration of problems below the repository level or in the regional geology which are the basic problems (in addition to the mineral resource conflict) at the proposed WIPP site. It is not clear that the definition of site characterization or the site characterization report must deal with these or similar issues. Obviously, if there are such problems with a site, the time, expense and work of in situ testing should be avoided. Thus, we would suggest that in §60.2(n) and in §60.11(a) specific mention of regional geologic conditions be required. Furthermore, it seems to us that in §60.11(f) that an environmental impact statement should be prepared, rather than leaving it to the discretion of the Department, as in the proposed rule.

Consultation and concurrence with the state should be required in §60.11(b), rather than merely a notification that state or local governments may be requested, as in the proposed rule. State participation and approval in all significant decision points of repository development is essential for any kind of public confidence in the licensing process. Thus, in §60.61 NRC staff must be readily available to the states to provide technical assistance and information.

Regarding public participation, it should not be left exclusively to the states, which is what the proposed rule seems to imply in §60.62(c)(4). NRC should have public participation in its proceedings. And more than just allowing such participation through hearings, NRC should consider funding such participation, at least under a reimbursement method similar to that used in the Public Utility Regulatory Policy Act (PURPA). Furthermore, NRC's rule should require that DOE fund and be responsive to public concerns and input. Specifically, in §60.11(a)

Acknowledged by card. *[Signature]*

P.O. BOX 4524

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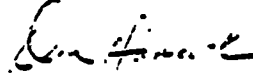
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(6) the rule should include not only the means used to obtain public input, but also the substance of the public input and what response the Department has made in addressing such input.

As we have more detailed comments on the proposed rule, we will submit them. Thank you for your consideration.

Cordially,



Don Hancock

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2-2-80  
(44FR 70409)

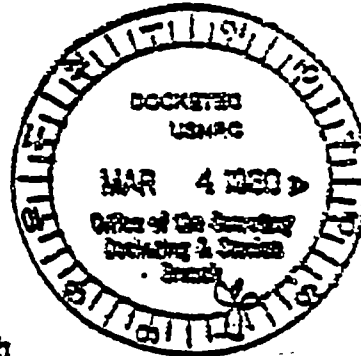
Westinghouse  
Electric Corporation

Power Systems  
Company

Box 10884  
Pittsburgh Pennsylvania 15238

MT Johnson  
General Manager  
Advanced Energy Systems Division

February 25, 1980



Secretary  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

Subject: Disposal of High Level Radioactive Wastes in Geologic Repositories

Dear Sir:

This is in response to your request for comments on the proposed licensing procedures for disposal of high level radioactive wastes (HLW) in geologic repositories.

The proposed licensing procedures have several general deficiencies:

- a. The preamble's references to "best" (pages 70410 and 70412) makes inevitable a never-ending quest for a licensable repository site. It is unlikely that a "best" site can ever be determined. More likely, many sites will be found, each capable of meeting realistic licensing criteria provided a systems approach is utilized.

The National Academy of Sciences recently concluded that it is not necessary to look upon HLW disposal as a problem to which a perfect solution must be found before any action can be taken. They emphasized that storage of waste at geologic sites would engender much smaller risk to the public than that of routine emissions from the rest of the fuel cycle.\* NRC's rulemaking on 10CFR60 should take this into account. A licensing philosophy based on a "best" site, a "best" waste form or a "best" waste package should be avoided. Instead, an overall systems approach should be adopted to license a geologic repository. Realistic licensing criteria should be developed during the design, construction and operation of repository system demonstrations which should become a required element in near-term national programs.

- b. It is our understanding that forthcoming technical criteria, 10CFR60 Subpart E, will place no reliance on the geology for radionuclide containment during the first 1,000 years. If this is the case, the proposed licensing procedures

\* Handler, P. et al, "Energy in Transition, 1985-2010," Committee on Nuclear and Alternative Energy Systems (CONAES), National Academy of Sciences, Washington, D.C., December 1979.

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February 25, 1980

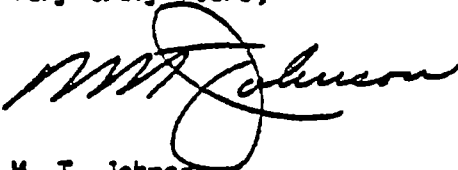
concerning site selection are too conservative (e.g., see Attachment Item 1). However, we believe that due reliance should be placed on geologic barriers, and that performance criteria should apply to the overall repository system. Therefore, NRC should not finalize the proposed rule until the forthcoming technical criteria are published and acted upon.

- c. In some cases these proposals go beyond licensing procedures, and appear to establish national policy. For example, irradiated reactor fuel should not be included in the definition of high level waste, 60.2(i). Such a definition preempts a change in the existing National Policy on reprocessing. In addition, the footnote to 51.40(d) and the definition of required site characterization, 60.2(n), call for a large number of exploratory shafts and testing at depth. These policy proposals appear to exceed both technical and NEPA requirements, and should not be included in NRC regulations.
- d. The proposed procedures tend towards increasing bureaucracy and taxpayer expense rather than toward assurance of public health and safety. For example, 10CFR60.3(b) and 10CFR60.11(g) state that NRC may deny DOE a license for a given site if certain NRC administrative procedures are not followed. The granting or denial of a license should be determined solely on a balance of factors affecting the public interest, and not regarded as an inter-agency punitive remedy.

Also, need for the proposed extensive involvement of NRC during the site characterization process is far from clear. Since NRC will issue no license or authorization at this point in the process, or be in any way bound as a result of such review, it is difficult to see how this accomplishes any useful objective.

Additional detailed comments are provided in the attachment. Westinghouse fully recognizes that national importance of nuclear waste management, and is prepared to assist in any way possible in the resolution of our comments.

Very truly yours,



M. T. Johnson  
General Manager

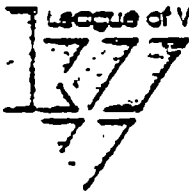
Attachment

ATTACHMENT - DETAILED COMMENTS ON NRC PROPOSED LICENSING PROCEDURES

1. The requirement for at-depth evaluation of alternative sites and geologic media in addition to the preferred site is more than that which is required. Surface investigation and borehole drilling will allow a comparison of potential sites and geologic media which can be identified as alternatives. In order to provide a balance between data required and expenditures, only the preferred site, as determined from the surface evaluations should be investigated in situ. The in situ evaluation will identify whether this preferred site is adequate as a geologic repository. Assuming the site is found to be adequate, there should be no need to further investigate alternative sites since from a surface evaluation, none is clearly superior. The concept that a proposed site must be adequate with no clearly superior alternatives, rather than optimal, has been determined in several Atomic Safety and Licensing Appeal Board Hearings.

If the preferred site should be evaluated as not adequate based upon the site characterization at-depth, the program must then be modified to make the repository adequate by changing the scope of the mission or an alternative repository must be evaluated in depth. This evaluation can be substantiated by the NRC at the time of construction permit application and would eliminate the need for expending resources to evaluate alternate repositories at depth which would not be required for the mission.

2. The stated costs of 20 million dollars per site investigation (including in situ experiments) appears to be much too low, depending on the geologic media.
3. Note that not only can NRC (Director) comment on site work, but based upon DOE's research and development in waste matters he is free to comment on all such matters, and can do so, presumably, based upon preliminary data that DOE would furnish under the explanation of "Other Reviews", Page 70412. The Director can also provide ... "specific guidance on technical matters relevant to licensing requirements". This can seriously delay the timing for DOE's submission for construction authorization, and receipt of wastes (Part 3).
4. The definition of high-level waste in 60.2(i) should be revised so that irradiated reactor fuel is not included in material emplaced "with no intent to retrieve for resource values" (60.2(e)).
5. In 60.6, it would appear that exemptions can be granted without notice or opportunity for comment. This seems inappropriate.
6. 60.11(e) should be revised to specify time limits for NRC's review.
7. It should be clarified throughout that DOE regulations require an Environmental Assessment for each site characterization, and not an Environmental Impact Statement.



6

DOCKET NUMBER  
PROPOSED RULE PR-2111  
(44 FR 70408)

SECRETARY  
RUTH L. WINFIELD

DIRECTOR  
VICE PRESIDENTS  
VICE PRESIDENT  
VICE PRESIDENT  
VICE PRESIDENT  
VICE PRESIDENT  
VICE PRESIDENT

SECRETARY/TREASURER  
VICE PRESIDENT  
VICE PRESIDENT

DIRECTOR  
VICE PRESIDENT  
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VICE PRESIDENT

February 28, 1980

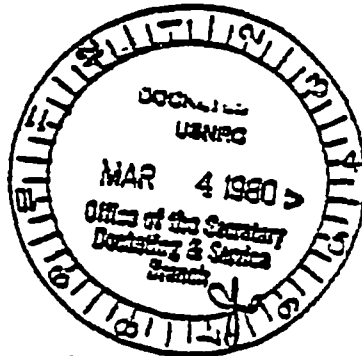
Secretary of the Nuclear Regulatory  
Commission  
Washington, DC 20555  
Attention: Docketing and Service Branch

Dear Sir:

Enclosed are the League of Women Voters of the United States' comments on the Nuclear Regulatory Commission's proposed rule on the disposal of high-level radioactive wastes in geologic repositories. 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60 and 70.

Sincerely,

Dorothy Powers  
Energy Chair



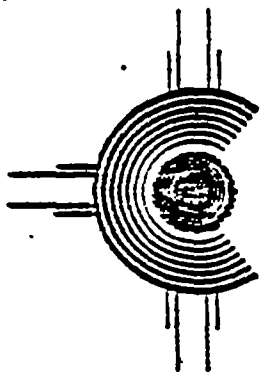
Acknowledged by card. 3/2... *[Handwritten initials]*

Comments on the Proposed Rule for  
Licensing the Receipt and Disposal of High-Level Radioactive Wastes (HLW)  
at Geologic Repositories

Nuclear Regulatory Commission 10 CFR Parts 2, 19, 20, 21, 30, 40, 50, 60  
and 70.

We are pleased that the proposed rule includes opportunities for state and local involvement in HLW repository siting and licensing. To further improve these provisions, we would like to offer the following recommendations:

- (1) While the proposed rule provides opportunities for formal hearings during the siting and licensing process, it leaves the decision on whether hearings are actually needed to the NRC Commission. [2.105(a)] Considering the national importance of such projects and the concern that state and local governments and the general public have expressed with regard to nuclear waste disposal, it seems reasonable to require mandatory hearings before any HLW repository is authorized for construction.
- (2) While the proposed rule states that "proposals for participation and review shall be signed by the governor of the state submitting the proposal..." the regulations do not specify that the governor's office will coordinate the preparation of the proposal. [60.62(c)] Thus, under the proposed rule, citizens would be at a loss to know whom in their state to approach with recommendations for this proposal. The regulations should require the governors of affected states to appoint a lead agency, office or committee to serve as a liaison with NRC staff and citizens on the site characterization plans and license application.
- (3) The regulations state that after the Department of Energy has published a notice of the availability of the draft site characterization analysis in the Federal Register, "a reasonable period, not less than 60 days, shall be allowed for comment on the draft site characterization analysis." [60.11(e)] The regulations also say that states potentially affected by DOE's analysis may submit to the Director (NRC) a proposal for state participation in the review of the site characterization report and/or license application. [60.62(b)] But what is not clear is how much time a state will have to prepare a proposal (including obtaining citizen comments), apply to NRC for funding of that proposal, and complete its program. Assuming that the state participation program takes a year or longer to complete (which is very likely), it would seem that the general public should have the same length of time concurrently to comment on the characterization plan. Thus, the regulations should clarify how the time frame for state participation in DOE's site analysis will relate to the time frame for general public review and comment.



DOCKET NUMBER  
PROPOSED RULE

7  
PR-2 (hal)  
(44FR 70408)

# Council Of Energy Resource Tribes

One Thousand Connecticut Avenue, N.W.  
Suite 810 • Washington, D. C. 20036  
(202) 466-7702

March 3, 1980

**Executive Committee:**

- Peter MacDonald  
Chairman  
Navajo
- Floyd Corros  
Vice-Chairman  
Pueblo of Laguna
- Leonard Acole  
Secretary  
Hopi Apache
- Allen Rowland  
Treasurer  
Northern Cheyenne
- Leonard Burch  
Executive Member  
Southern Ute
- Forrest Horn  
Executive Member  
Crow
- Wilfred Scott  
Executive Member  
Navajo

**Board Members:**

- Acama Pueblo
- Blackfoot
- Cheyenne River Sioux
- Chippewa-Cree
- Crow
- Fort Salinas
- Fort Berthold
- Fort Hall
- Fort Peck
- Hopi
- James Pueblo
- Santa Ana Pueblo
- Spokane
- Ute Mountain
- Ute Mountain
- Wind River
- Yalton
- Zia

**Executive Director:**

Ed Gabriel

Secretary of the Nuclear  
Regulatory Commission  
Attn: Docketing and Services Branch  
Washington, D.C. 20555

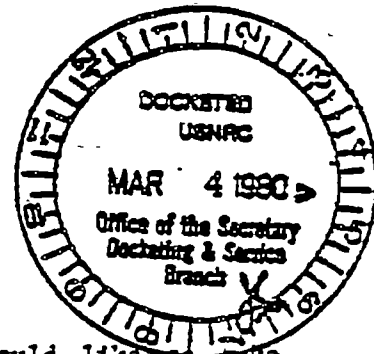
Dear Sir:

The Council of Energy Resource Tribes (CERT) would like to take this opportunity to comment on the NRC's proposed rules on the "Disposal of High-Level Radioactive Wastes in Geologic Repositories, Proposed Licensing Procedures." The proposed procedural rules represent a first step in finding a long-term solution to the problems associated with disposing high-level radioactive wastes. It is our understanding that the NRC will propose technical standards in future rulemaking. The following comments address the procedural mechanisms being proposed in this rulemaking.

As presently drafted, the licensing procedures fail to account for the unique status of Indian tribes and Indian lands. This oversight can be corrected by amending these regulations in at least two ways.

First, Indian tribal governments should be provided an adequate opportunity to participate in the licensing process. Separate consideration for Indian tribes is necessitated by the absence of state jurisdiction over land-use and resource matters on Indian lands as well as by the special relationships between the federal government and Indian tribes.

Second, the legal and institutional aspects of site acquisition and regulatory controls should be addressed more thoroughly. In their current form, the regulations implicitly assume that the applicant has title to, and jurisdiction over, the site. The extremely complex nature of land-ownership patterns in the western states could pose problems which are as formidable as the technical questions. The unique status of tribal lands illustrate this situation. The commission could benefit from expanding its review of such matters throughout the licensing process.



Acknowledged by card. 3/7 [Signature]



Secretary of the Nuclear  
Regulatory Commission  
March 3, 1980  
Page Two

The following materials discuss these concerns in greater detail.

#### Tribal Participation In Waste Management

CERT is an association of 25 Indian tribes in the West which own substantial blocs of coal, uranium, oil and gas and other resources. Exhibit I lists the member tribes and indicates their location relative to states and countries. Exhibit 2 is a map indicating the general location of the reservations.

Several CERT tribes are either directly or indirectly affected by existing radioactive waste storage facilities. For example, the Yakima Nation and Fort Hall Tribes are located near the operations at Hanford and Idaho Falls, respectively. The Navajo Nation, Pueblo of Laguna, and Spokane Tribes produce uranium and have experienced the adverse impacts of mill tailings from the mills located on or adjacent to their reservations. Similarly, several Indian Pueblos are near the transuranic wastes stored at Los Alamos, New Mexico. Their experiences with these existing, temporary waste sites have heightened their concerns about the long-term effects on the surface water and groundwater quality, on air quality, on soil productivity and on land use.

If the Energy Department anticipates using basalt (Washington State), granite (Nevada) and/or salt domes as possible geologic media for the permanent disposal of highly radioactive wastes, these and other American Indians may once again be affected. Any Indian tribe affected by the siting process should be made an integral part of the NRC's review and licensing proceedings.

Regulations should explicitly provide for the participation of Indian tribes for both legal and practical reasons. Quite often, regulation writers presume that Indian tribes are within the purview of the states, and that by providing for state participation Indian interests are covered. This, however, is not the case. Indian tribes have a unique position in the governmental regulatory scheme because of their status as <sup>\*\*</sup>sovereign entities having inherent powers of self-government—subject only to congressional enactments and the oversight of their federal trustee, the Secretary of the Interior. Together,

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\*/ This discussion is limited to the CERT-member tribes. CERT suggests that the Commission and DOE consult with the Department of the Interior and other Indian specialists for detailed information on the non-CERT member tribes.

\*\*/ Virtually all of the CERT member tribes operate under a system of government developed by their people and codified in Tribal Constitutions and By-Laws or in a Tribal Code. The majority of the CERT tribes are organized consistent with the provisions of the 1934 "Indian Reorganization Act (IRA)".

Secretary of the Nuclear  
Regulatory Commission  
March 3, 1980  
Page Three

tribal sovereignty and the federal trust relationship legally preempt any state role in, or jurisdiction over, the affairs of the CERT tribes. In practice these legal factors constrict the flow of funds and information between the states and the tribes.

Recent federal legislation and federal administrative actions have begun to accommodate the legal distinction between Indian tribal governments and their state and local counterparts. Examples include the Surface Mining Control and Reclamation Act and Part I of the Uranium Mill Tailings Control and Reclamation Act. In addition, the Bureau of Land Management provides for the direct participation of Indian tribes in its Coal Management Program on a par with affected states. Likewise, the Environmental Protection Agency has initiated direct funding to Indian tribes for their air and water quality management programs.

CERT urges the NRC to amend the proposed regulations to provide expressly for the participation of affected Indian tribes whenever a potential disposal site could have an impact on tribal land. Attached to this letter are some possible language changes which could achieve this purpose.

#### Site Acquisition

The regulations assume that the site(s) for waste storage will be owned or acquired by the federal government. However, the complex nature of land ownership in the western United States may present obstacles to the siting of storage facilities. The proposed regulations devote considerable attention to important technical matters, but fail to provide for review of these legal and institutional matters. CERT feels that the Commission would be advised to analyze these aspects of the site in tandem with the technical reviews. On Indian reservations the right to surface or subsurface use of the land is obtained only, by written contract with the tribe and the approval by the Secretary of the Interior. These agreements are for a limited time only, and can be extended only by the tribe's consent. It would be wasteful to proceed with a site characterization review on the assumption that Indian lands, could be acquired, only to find this assumption totally unfounded. Such problems could be prevented by requiring certification of ownership and jurisdiction as part of the general license information. Such information is a standard element in mining and other land-use licensing procedures. Regulatory language for this change also is included in the attachment.

Thank you for your consideration of these concerns. If we can be of further assistance, please notify us.

Sincerely,

*Edward Gabriel*

Edward Gabriel  
Executive Director

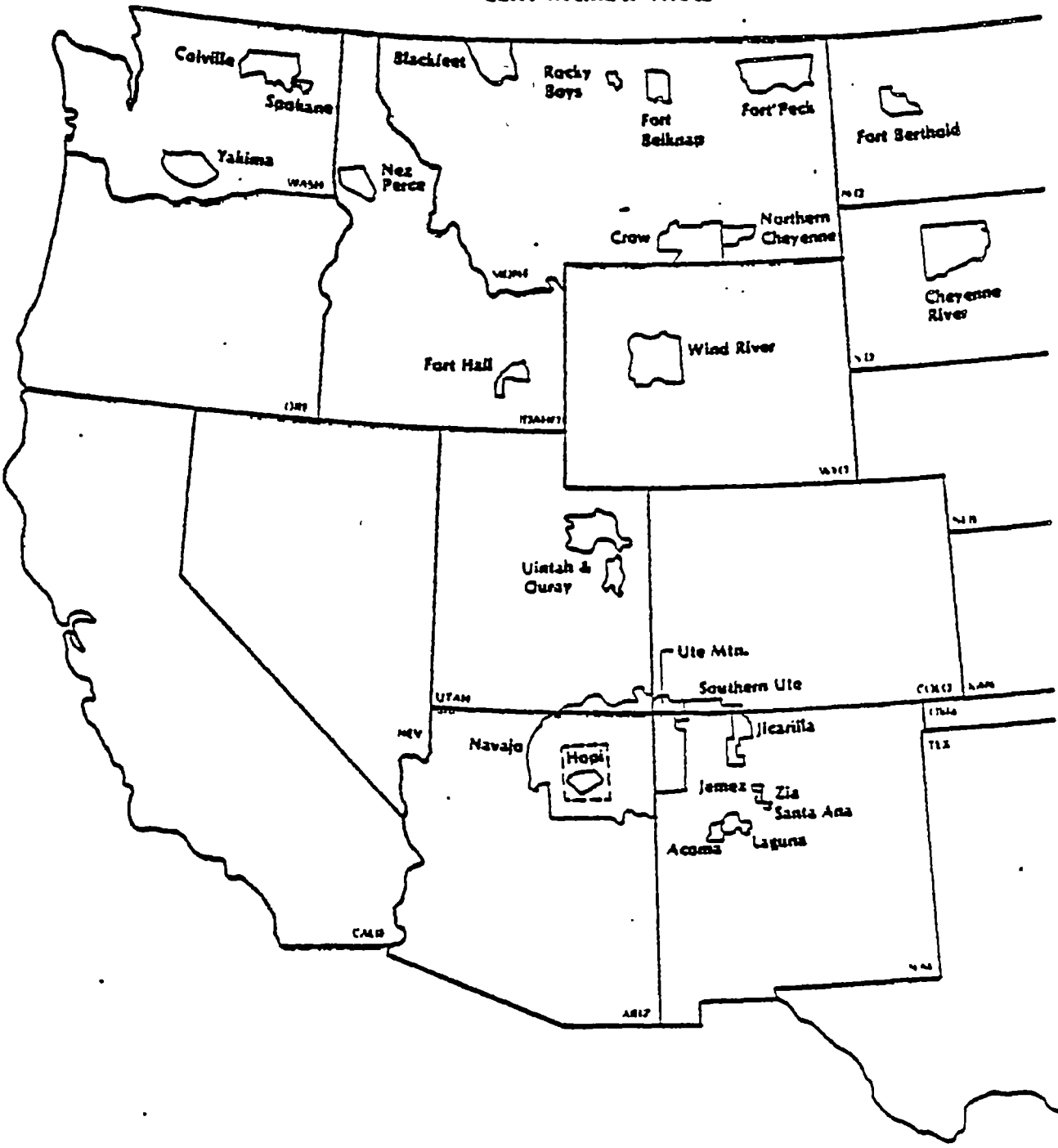
Attachment

**EXHIBIT I**  
**Location of CERT Tribes**  
**by**  
**County and State**

CERT Tribe	County	State
Acoma Pueblo	Valencia	New Mexico
Blackfeet	Glacier Pondera	Montana
Colville	Okanogan Ferry	Washington
Cheyenne River Sioux	Ziabach Dewey Perkins	South Dakota
Jicarilla Apache	Sandoval Rio Arriba	New Mexico
Southern Ute	Montezuma La Plata Archuleta	Colorado
Pueblo of Laguna	Bernalillo Valencia Sandoval	New Mexico
Fort Peck	Phillips Blaine	Montana
Wind River	Fremont Hot Springs	Wyoming
Fort Berthold	McKenzie Dunn Mercer McLean Mountrail	North Dakota
Uintah-Ourray	Uintah Duchesne Grand	Utah
Crow	Big Horn Yellowstone Treasure	Montana
Navajo	Apache Navajo Coconino San Juan McKinley San Juan	Arizona  Utah New Mexico
Spokane	Stevens	Washington
Santa Ana Pueblo	Sandoval	New Mexico

Uta Mountain	Montezuma	Colorado
	La Plata	
	San Juan	New Mexico
	San Juan	Utah
Fort Bellmap	Blaine	Montana
	Phillips	
Northern Cheyenne	Big Horn	Montana
	Rosebud	
Jemez Pueblo	Sandoval	New Mexico
Nez Perce	Nez Perce	Idaho
	Lewis	
	Clearwater	
Hopi	Coconino	Arizona
	Navajo	
Fort Hall	Bannock	Idaho
	Bingham	
	Caribou	
	Power	
Zia Pueblo	Sandoval	New Mexico
Yakima	Yakima	Washington
	Klickitat	
Chippewa-Cree	Choteau	Montana
	Hill	

# CERT Member Tribes





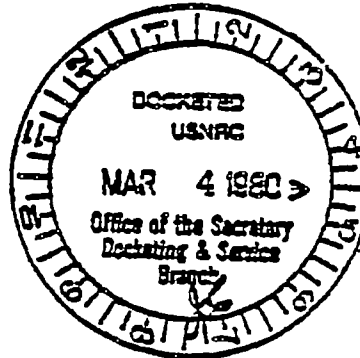
THE UNIVERSITY OF ARIZONA  
TUCSON, ARIZONA 85721

COLLEGE OF ENGINEERING  
DEPARTMENT OF NUCLEAR ENGINEERING

8

February 20, 1980

DOCKET NUMBER  
PROPOSED RULE PR-2 et al  
(44PR 70408)



Secretary of the  
Nuclear Regulatory Commission  
Attn: Docketing and Service Branch  
Washington, D. C. 20555

Dear Sir:

Attached are my comments on the proposed rules, 10CFR Parts 2, 19, 20, 21, 30, 40, 51, 60 and 70 as published in the Federal Register, Vol. 44, No. 236, December 6, 1979.

The overall proposed rules are well written; however, it is apparent from my comments that I take issue with several concepts.

If there are any questions on my comments, please feel free to contact me at (602) 626-4985.

Sincerely,

*James G. McCray*  
James G. McCray, Acting Director  
Nuclear Fuel Cycle Research Program

Encl.

JGM/mfr

Acknowledged by card... 3/7 *gf*

## COMMENTS

### General

1. It should be clearly specified that no EIS is necessary for the Site Characterization Report.
2. The Site Characterization Report should be made to NRC on a site by site basis. This report should be restricted to justification for beginning site characterization at a particular site and not involve comparisons with other candidate sites.
3. The Site Characterization Report should not involve the Department's program for further development of alternatives.
4. The NRC should not be involved in the screening of sites for site characterization.

### Subpart B - Licenses

#### 60.11 Delete (5)

Delete in (7) .... "The Department may include multiple sites in a single site characterization report." and... "and alternate areas".

#### Comment:

The Site Characterization Report should not be a candidate site comparison document.

### Subpart C - Participation by State Governments

#### Paragraph 60.83 (c)

Add: "....., the decision shall be approved by the Commission and shall state the reason for the rejection."

#### Comment:

If there is a requirement that the state plan be signed by the State Governor, then it seems appropriate that any rejection be approved at the highest level, i.e. the Commission.



by Ansel Adams in *This is the American Earth*

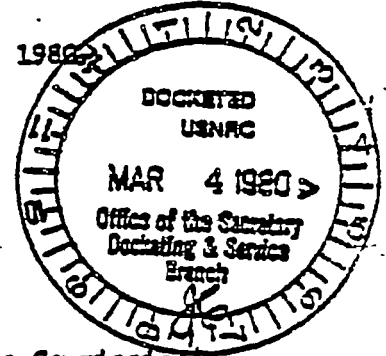
DOCKET NUMBER  
PROPOSED RULE PR-2444 (44 FR 70408)  
**SIERRA CLUB**

330 Pennsylvania Avenue, S.E.  
Washington, D.C. 20003  
(202) 547-1141

March 3, 1980

Secretary of the Nuclear Regulatory Commission  
Washington, D.C. 20535

Attention: Docketing and Service Branch



The Sierra Club appreciates this opportunity to comment on the Commission's Proposed Rule on Disposal of High Level Radioactive Wastes in Geologic Repositories: Proposed Licensing Procedures (44 F.R. 70408, December 6, 1980).

The Sierra Club endorses many of the principles in the Proposed Rule, many of which have been supported by the Final Report of the Interagency Review Group on Nuclear Waste Management and in President Carter's February 12, 1980 Policy Statement on Nuclear Waste Management. However, we do differ with a number of the provisions of the Proposed Rule. The comments below are limited to several of these key provisions. However, our interests and concerns are not necessarily limited to those sections specifically addressed below.

Before addressing specific provisions in the Proposed Rule, we must discuss the underlying assumption that the Nuclear Regulatory Commission should retain the legal authority to license and otherwise regulate the geologic disposal program. This is assumed, of course, by the Interagency Review Group and President Carter.

There is no question that the geologic disposal program should be regulated by a federal agency other than the Department of Energy, which is responsible for conducting the program. However, the Sierra Club does not believe that, barring fundamental changes at the Commission, the Commission can be counted on to perform this important function.

We believe that the Commission, both as an institution and in the case of the majority of its personnel, is biased in favor of the nuclear power industry. This pro-industry inclination has been noted recently by the President's Commission on the Accident at Three Mile Island. The Commission's Report stated:

...we have seen evidence that some of the old promotional philosophy still influences the regulatory practices of the NRC. While some compromises between the needs of safety

Acknowledged by card. 3/7 [signature]



Secretary of the Nuclear Regulatory Commission, p. 2

and the needs of an industry are inevitable, the evidence suggests that the NRC has sometimes erred on the side of the industry's convenience rather than carrying out its primary mission of assuring safety. (p. 19)

The NRC, the Commission found, "is so preoccupied with the licensing of plants that it has not given primary consideration to overall safety issues." (p. 51), and that "(w)ith its present organization, staff, and attitudes, the NRC is unable to fulfill its responsibility for providing an acceptable level of safety for nuclear power plants." (p. 56) (emphasis added)

The Rogovin Report was also highly critical of the NRC's operations, finding that "(i)n sum, the Nuclear Regulatory Commission has provided neither leadership nor management of the Nation's safety program for commercial nuclear plants." (p. 114)

Largely in response to the evidence of this pro-industry mind set, the President's Commission recommended a major restructuring of the NRC, including the establishment of an oversight committee on nuclear reactor safety, to be appointed by the President, to examine the performance of the NRC and the industry in addressing nuclear power plant safety issues and "in exploring the overall risks of nuclear power." (Recommendation No. 2)

The second reason for our concern is that the growing uncertainties regarding nuclear waste management, including the absence of an approved geologic repository, are beginning to have significant adverse political and economic consequences for the nuclear industry and the future of the nuclear power program. Representatives of the nuclear power industry have publicly identified the nuclear waste issue as being as great a threat to the nuclear power program as the Three Mile Island accident and power plant safety questions. Moreover, legislation now before the Congress would require a phase-out of the nuclear power program unless specific "solutions" to the nuclear waste crisis are achieved by certain dates.

In the area of nuclear power plant regulation, the President's Commission found that the pro-industry bias of the Commission resulted in at least some actions designed for the protection of the industry, at the expense of public safety concerns. Neither the President's Commission nor the Rogovin Report investigated the nuclear waste regulation role of the NRC. Unfortunately, we find no substantial reasons to believe that the NRC's pro-industry bias will not also prejudice the Commission in its regulation of nuclear waste management activities, including the Department of Energy's geologic disposal program.

The NRC has not demonstrated any intention to regulate the geologic disposal program with the resolve to be expected of the regulating agency. The weaknesses of this Proposed Rule, as discussed below, unfortunately, are further testimony to the Commission's unwillingness to cast aside its past prejudices and to demonstrate the political courage requisite to a successful geologic disposal program.

The safe management and disposal of high level wastes, transuranic wastes, and spent fuel, are necessary to protect the public health and safety and natural support systems, both now and for generations to come. We must ensure that the regulators of the nuclear waste management program will strive only to provide for the safest possible disposal of these wastes, and will not be influenced by concerns for the well being of the nuclear power industry. Therefore, we must conclude that, barring a radical change in its attitudes and its operations, the NRC should not remain responsible for regulating the geologic disposal program. We recommend that, absent rapid, major shifts in the the Commission's attitudes and functioning, the Commission's licensing authority over the DOE geologic disposal program be transferred to a new independent commission in the federal executive branch whose sole responsibility is the regulation of nuclear waste activities and programs including, but not necessarily limited to, geologic disposal.

Notwithstanding the above comments, we welcome the opportunity to comment on this Proposed Rule. Adoption of these and similar suggestions by other interested persons could, of course, constitute the major shifts we believe are necessary in the NRC program. We endorse, in principle, the majority of the licensing procedures outlined in the Federal Register discussion preceding the Proposed Rule. (Assuming, of course, that the NRC retains its licensing authority.) However, the Proposed Rule would fail to implement adequately several of the most important of these principles.

(1) The Proposed Rule should expressly require the Department of Energy to characterize fully several sites in a variety of different geologic media as a prerequisite to applying for a license under Section 60.21. The Federal Register discussion preceding the Proposed Rule stresses repeatedly the value of characterizing several potentially acceptable sites in a variety of geologic media. Moreover, it is assumed that DOE will conduct such a program. (See "Departure From the General Statement of Policy" at 70409, "Site Characterization Review" at 70409, "Provision for Characterizing Several Sites" at 70409-10, and "Procedures" at 70411.) This requirement was also stressed in President Carter's February 12, 1980 Policy Statement. Yet neither Section 60.21 nor any other section requires multiple site characterizations prior to DOE's application for a license.

(2) The standard to be applied in deciding whether to authorize construction of a geologic repository is entirely too weak. (Section 60.31) The required "Safety" finding (Section 60.31(a)) is merely that there be a "reasonable assurance" that the types and amounts of wastes in the application "can be received, possessed, and disposed of in a repository of the design proposed without unreasonable risk to the health and safety of the public." This finding is entirely too lax.

The purported "Environmental" finding (Section 60.31(c)) is not even an environmental finding. Rather, it is a balancing test which could allow a construction authorization for a repository with recognized catastrophic potential environmental effects. Indeed, this finding is so vague as to be of virtually no value to the Commission or other interested parties.

Secretary of the Nuclear Regulatory Commission, p. 4

Similarly, the suggested "Common defense and security" finding (Section 60.31(b)) is so vague as to be of no consequence.

This Section should include a "best available site" standard, in addition to stricter versions of the "Safety," "Common defense and security," and "Environmental" standards currently in the Section.

The laxness of the Commission's standards is further evidenced in the "Other Reviews" discussion preceding the Proposed Rule, describing the Commission's hope that the DOE site-screening process will lead merely to "a slate of characterized sites whose members are among the best that reasonably can be found." (at 70412) (emphasis added)

(3) Similarly, the standards for issuance of a license under Section 60.41 are entirely too weak. Among other things, the test in subsection (c) should be strengthened substantially.

(4) Section 60.11 should require formal public hearings prior to site characterization. The value of these hearings is touched upon in the "Site Characterization and Authorization of Construction" discussion (at 70410-11) and the "Site Characterization Review" discussion (at 70409). The reasons given for rejecting these hearings are not sufficiently strong to outweigh the hearings' merits. We find it difficult to comprehend the Commission's reasoning that "any decision on alternative sites issues at this early point is likely to require reexamination at the construction authorization proceedings and, therefore, would be of questionable value," given that the Proposed Rule does not require the characterization of alternate sites. (at 70410) Moreover, the Commission's finding that the hearing process "can be an inefficient and cumbersome means of arriving at decisions" (at 70410) should be outweighed by the importance of the issues and the Commission's own recognition that "it would be possible for the Commission to structure its proceedings so as to provide for formal hearings on limited issues at an early stage in the process," and that "(t)he hearing process has clear advantages as a mechanism for fact finding." (at 70410)

(5) The Proposed Rule should also require formal proceedings for public consideration of DOE's waste form research and development program. The Proposed Rule should contain other action-enforcing provisions enabling the Commission to ensure that the waste form program is sufficient.

(6) The Proposed Rule should establish an intervenor funding program for persons who contribute in a significant fashion to any proceeding which is a part of the regulatory process described in the Proposed Rule. The NRC currently has the power to establish such a program.

(7) The Proposed Rule should provide that the Immediate Effectiveness Rule shall not apply to any official actions of the Commission covered by the Proposed Rule.

(8) The Commission should prepare an environmental impact statement for the Proposed Rule. This would be consistent with the Final Report of the Interagency Review Group on Nuclear Waste Management and President Carter's February 12 Policy Statement, both of which stressed the

importance of NEPA in the nuclear waste management program. (See 70412)

(9) The strictness of the "important to safety" standard applicable to structures, systems and components should be increased significantly. (Section 60.2(j), at 70416)

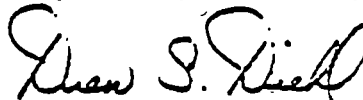
(10) The minimum period for public comments on the draft site characterization analysis should be increased from 60 days to 90 days. (section 60.11(e), at 70416)

(11) Section 60.32 should be strengthened by amending subsection (b) to read: "The Commission shall incorporate provisions requiring..." (at 70419)

(12) Section 60.52, which provides for the termination of a license following the decommissioning of the site, should be eliminated from the Proposed Rule. The issue of license termination is a major policy question requiring further study prior to adoption. Such a provision can always be added to the Commission's Rules at a future date.

This concludes our formal comments on the Proposed Rule. Once again, we appreciate the opportunity to comment on this important proposal.

Respectfully Submitted,



Drew S. Diehl  
Washington Representative.

ENERGY RESOURCES CONSERVATION  
AND DEVELOPMENT COMMISSION1111 HOWE AVENUE  
SACRAMENTO, CALIFORNIA 95825

(916) 920-6815

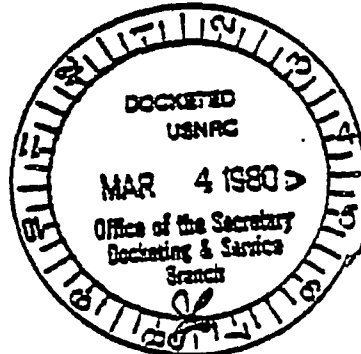


March 3, 1980

DOCKET NUMBER

PROPOSED RULE

10  
PR-2444  
(PR 70408)

Secretary of the Nuclear  
Regulatory Commission  
Washington, D.C. 20555Attn: Docketing and Service  
Branch

Dear Mr. Secretary:

The proposed licensing procedures for disposal of high-level radioactive waste in geologic repositories (Federal Register, December 6, 1979) are a significant improvement over the proposed general statement of policy which the U.S. Nuclear Regulatory Commission (NRC) issued in November 1978. The current proposal demonstrates this improvement in two ways. First, the Supplementary Information indicates NRC's recognition that an understanding of the fundamental scientific questions associated with long-term geologic isolation from the biosphere of nuclear wastes is the key to a successful licensing program. Second, it provides a framework within which the necessary information may be gathered as a basis for determining whether a specific repository design at a specific site will provide "reasonable assurance" that radioactive wastes can be disposed of without "unreasonable risk to the health and safety of the public."

We commend NRC's efforts toward structuring a workable licensing procedure, and support the basic approach embodied in these proposed regulations. In general, we agree with the statement on page 70411 of the Supplemental Information that:

"The technical criteria against which the license application will be reviewed are still under development. However, the scope of the technical criteria is regarded as being sufficiently developed to determine an appropriate licensing procedure for their implementation." (Emphasis added)

We do not believe, however, that the current proposal contains all the procedural steps which our understanding of this scope implies are necessary to make licensing decisions. Several aspects of the regulations are vague; we believe they can be improved by making changes consistent with the following discussion.

Acknowledged by card... *[Signature]*

### Site Characterization

Site characterization is the foundation of the licensing process; it provides the data on which the licensing decision will be based. Similarly, a key feature of site characterization is the investigation of alternative sites and media.

NRC appears to agree with this view. Footnote seven on page 70411 of the Supplemental Information states that NRC expects the U.S. Department of Energy (DOE) to submit a "wider range of alternatives" than what is considered a minimum: three sites representing a minimum of two geologic media. The "significance of the decision selecting a site for a repository" is cited as justification for expecting DOE to exceed the minimum requirements.

We have two concerns about this approach. First, our interpretation of the significance of repository selection is such that two media should be investigated at a minimum of two sites per medium. Second, NRC's intent with respect to considering alternatives is not reflected in the regulations. There is no requirement for DOE to submit more than one site characterization report or to characterize more than one site. Furthermore, the Environmental Impact Statement (EIS) filed with the license application may have to be site specific to fulfill the requirements of sections 51.5 and 60.21. We suggest that the regulations specify more explicitly the requirements for site characterization and the contents of the site characterization report. Alternatively, an EIS could be required for the site characterization process. In addition, the proposed regulations do not provide for adequate consideration of either NRC's or the public's comments on site characterization reports. The regulations should specify that DOE must respond to issues raised in the site characterization report.

The process for implementing the technical criteria is also vague. The draft regulations indicate that the hydrology, geochemistry, geology, etc., of the proposed sites must be explored. They also indicate that these features need to be explored through a series of tests, including in situ testing at depth. The data obtained from these tests would then be compared against the yet-to-be-developed technical criteria. We envision these criteria to be such things as, for example, tolerance limits for thermal response of the host rock, leach rate limits for the in situ waste form, and ion migration rates under conditions of repository failure. Since the technical criteria are nonexistent, however, the regulations lack an important step; that is, a matching of technical criteria with the specific test or tests which will prove that these criteria can be satisfied by the proposed repository site. Although such a matching is impossible to complete without technical criteria, it can be approached by specifying certain experiments which absolutely must be performed. These experiments can be specified using the current scope of understanding of the technical aspects of repository design, and without obligating NRC to issue a license once the experiments are done. The California Energy Commission has done extensive

work in this area and has discussed these experiments in public documents. For example, in addition to the requirements for alternative site and media investigations mentioned above, we recommend that thermal experiments be run at well above design base heat loads to determine if unexpected effects occur and to our ability to predict thermal response. In situ tests should also include radionuclide or stable element migration over reasonable ranges of water temperature, pressure, Eh, and pH to examine actual geochemical, diffusion and waste-rock interactions under natural conditions.

Thus, NRC could currently specify within the procedural element of the proposed regulations, a number of specific experiments which would aid in the successful licensing of a repository. Doing so would demonstrate the good faith of NRC to address the scientific issues, including the most basic issue: Are the technical criteria adequate to assure isolation? Furthermore, specifying such experiments is a necessary step if NRC views the licensing process as a means for developing technical criteria.

#### License Application and Construction Authorization

Section 60.21(c)(13) requires DOE to specify in its license application--that is, after site characterization and before construction authorization--"those structures, systems, and components of the geologic repository, both surface and subsurface, which require research and development to confirm the adequacy of design." A time scale is required for resolving issues related to items "important to safety."

Although this language describes a procedure which is common in reactor licensing, repository licensing differs from the former in at least one critical aspect. As noted in the Supplemental Information section, under Site Characterization Review (page 70409), the two processes differ in "the extent to which engineered features can be relied upon to accommodate deficiencies in site characteristics." Obtaining such information for geologic repositories has been an elusive goal in the past, and there is little certainty about how quickly such information can be gathered in the future. Therefore, if critical, unanswered scientific and engineering questions are identified as requiring further research and development, and construction is authorized on this basis, there is a possibility that the licensing process and construction may have to be terminated at a later date--at a great cost. There is also a possibility that the project will acquire sufficient momentum that, except in the event of highly visible failure, termination will be ruled out. The regulations therefore should specify criteria which must be met prior to NRC's authorizing construction.

The most important criterion to be met concerns the geologic disposal concept itself. Our first concern is that the proposed regulations do not address adequately the contribution which geology makes to successful isolation. None of the criteria for site characterization includes provisions for locating a geologically stable site which provides assurances for predicted stability over the life of the repository. Site studies which do not consider geologic history may neglect adverse future changes in the ability of a site to isolate wastes for thousands of years. Therefore, we recommend that the proposed rule adopt the following guideline which was discussed in the NRC conference on

State Review of Site Suitability Criteria for High-Level Radioactive Waste Repositories which was held in Denver, New Orleans, and Philadelphia during September, 1977:

"The repository site should be shown to be geologically stable, i.e., it shall not have experienced geological events during the past 10<sup>7</sup> year period of a type and magnitude such that the long-term effectiveness of the repository could be compromised were similar events to occur at some future time."

In addition, we recommend that the geology of a proposed site be classified as "important to safety."

Second, the generally accepted view is that the geologic disposal concept has not been verified as a method which will assure long-term isolation of high-level radioactive wastes. This view is reflected in the Interagency Review Group's (IRG) report and in President Carter's recent statement on nuclear waste disposal. The licensing regulations therefore should require NRC, prior to authorizing construction, to 1) hold a formal proceeding and 2) make a specific finding on the feasibility of geologic disposal at the proposed site.

Deferring detailed consideration of decommissioning until all wastes have been emplaced (Section 60.51) is inappropriate. On p. 70409, it was noted that improper evacuation of an exploratory shaft could make the repository unsealable. The NRC cannot make a decision as to whether the repository can be sealed unless the methodologies for sealing are set forth and demonstrated prior to drilling the first shaft. Although relevant information will be acquired during the operational period and should be used at the time of the issuance of a license amendment, detailed plans should be in hand well before then to assure long term isolation.

#### State Participation

Support C -- Participation by State Governments -- does not meet what we see as the necessary criteria for state involvement in the siting, construction and decommissioning of a repository. Although the proposed regulations offer the state an opportunity to participate, and allow states to specify the scope of their concerns, the NRC is given the authority to make the ultimate decision on what issues states will and will not be able to review in a specific licensing proceeding, as well as the level of funding for review of approved state proposals. In addition, there is no process through which states can appeal an NRC decision on the scope of state involvement.

We realize that DOE bears a large portion of the responsibility for State participation and that NRC's proposal for State participation in the licensing process may be limited for that reason. What DOE proposes for State participation is unclear, however. It is therefore important for the licensing process to provide the basis for meaningful State review. Moreover, the comprehensive nature of the current proposal provides a framework for implementing necessary State participation processes.



The fundamental shortcoming of the current proposal is the lack of a mechanism for states, whether potential host states, or adjacent states, to halt the repository siting process when their concerns are not resolved. Interested states (i.e., states which have a generic interest or a policy concerned with nuclear waste) also have concerns which must be met through specific procedures; the scientific questions in repository development are the same for host, adjacent, and interested states. Section 60.62(b), which contains the undefined term "affected (states)," may eliminate input from interested states.


One mechanism for state involvement which has received a good deal of attention, most recently by the Interagency Review Group (IRG), is consultation and concurrence. While the Nuclear Fuel Cycle Committee of the Energy Commission is not tied to this specific terminology, we do support the concept which is embodied in the terminology. Consultation implies an absolute requirement for the federal government to meet, interact, and exchange information with states. Moreover, the idea of concurrence necessarily includes the possibility of nonconcurrence. The proposed licensing regulations appear to bypass entirely the latter concept.

The essential role of a potential host state under current scientific conditions and state-of-the-art should be to participate in the fundamental scientific verification program, even prior to a project being initiated within the state. This role means not only some form of consultative type interaction between the state and the federal government, but also that the state itself should be able to issue a series of concerns or scientific questions and have those questions resolved by its own experts by means of literature searches and informational hearings.

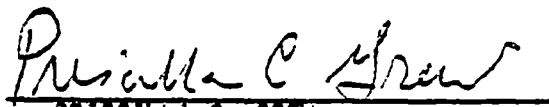
Normally the potential host state role is defined as either having a veto or some form of "cooperative" interaction with the capability to stop the project. This essentially anticipates a subordinate role. In terms of development and in terms of verification prior to licensure, a potential host state should have a capability of interacting on the project and halting the project at any phase of its development if the state is not satisfied that the project is moving forward with a reasonable and predictive set of methodologies. Of course, a mechanism must also be specified for arbitrating cases on non-concurrence and for an ultimate federal override if arbitration fails.

We offer these comments as constructive criticism of the proposed licensing regulations. We hope you give them serious attention.

Very truly yours,



EMILIO E. VARANINI, III  
COMMISSIONER AND PRESIDING MEMBER  
NUCLEAR FUEL CYCLE COMMITTEE  
CALIFORNIA ENERGY COMMISSION



PRISCILLA C. GREW  
DIRECTOR  
DEPARTMENT OF CONSERVATION



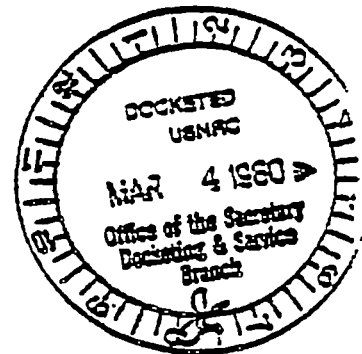
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PR - 2 et al  
(44FR 70408)

11

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.

Acknowledged by card 3-5-80, *ca*

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,



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 boroholes. 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 prejudge 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(1)

## (a) NRC Proposed Wording:

(1) "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.

Natural Resources Defense Council, Inc. 55

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RECEIVED  
EX-2 et al (44FR 70408)

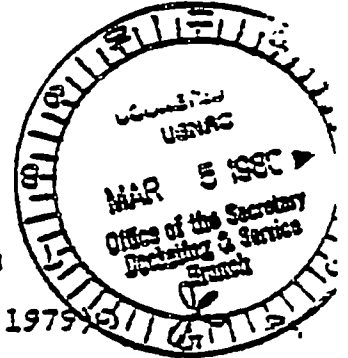
February 29, 1980

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212 949-0049

Secretary of the Nuclear Regulatory Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

Re: Disposal of High-Level Radioactive Wastes in  
Geologic Repositories; Proposed Licensing  
Procedures (44 Fed. Reg. 70408; December 6, 1979)



The Natural Resources Defense Council (NRDC) hereby submits its comments on the Nuclear Regulatory Commission's (NRC or the Commission) proposed licensing procedures for the disposal of high-level radioactive wastes in geologic repositories. The development of both these licensing procedures and the upcoming safety standards for repositories are urgently needed to guide the on-going activities of the Department of Energy (DOE or the Department) in selecting possible sites for geologic repositories. Unfortunately, due in large part to the absence of such procedures and safety standards, the Department continues an inadequate approach to the selection of potential sites for geologic repositories.<sup>1/</sup>

<sup>1/</sup>In particular, NRDC finds the Department's emphasis on salt domes in the Gulf Coast region highly ill-advised. Salt domes are inherently unstable formations, are often associated with significant natural resources, (footnote continued on next page)

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The Commission's proposed rule is a significant improvement over the earlier proposed general statement of policy. (43 Fed. Reg. 53869; November 17, 1978.) We applaud the overall approach incorporated in the proposed rule, and we congratulate the Commission on a job basically well done. NRDC strongly supports, in particular, the proposed step-by-step process for reviewing the Department's development of geologic repositories. This cautious approach, together with appropriate technical conservatism that we urge be incorporated in the upcoming technical criteria, is desirable because there is no experience in constructing geologic repositories anywhere in the world, and because there are known significant scientific uncertainties and gaps in knowledge about how to design, construct, and operate geologic repositories safely.<sup>2/</sup> Careful review at each initial stage in the selection of sites, construction and operation of repositories, and in the closure of repositories is necessary to protect public health and the environment adequately.

Also, geologic exploration and in situ testing at depth of several potential sites in different geologic media are an

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<sup>1/</sup>(cont. from page 1) are potentially valuable as storage facilities (as in the case of the strategic petroleum reserve), and they have the other disadvantages of salt, e.g., high solubility, low sorptive capacity, and inconvenience of maintaining ready retrievability of wastes. In our view, if DOE had had the benefit of adequate standards addressing the issue of natural resources and human intrusion, there would not be the current emphasis on salt domes.

<sup>2/</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A, page vi (October 1978).

essential component of regulations designed to protect the public health and safety of thousands of human generations to come. Important information about the possible future behavior of wastes emplaced in a deep geologic environment can be obtained only by study in that environment. Laboratory tests and investigations from the surface are useful and important, but they are also inherently limited. A high degree of assurance that wastes will remain isolated from the biosphere can be obtained only by extensive study deep underground at the actual site proposed for disposal.<sup>3/</sup>

An important aspect of the proposed approach is that there be investigation of several sites prior to selection of one for development, because this procedure will reduce the chance of undue institutional momentum accruing to a site that may be inferior. We believe that it was this concern that was behind the President's recent decision to cancel the Waste Isolation Pilot Plant, for instance. Indeed, without a provision for comparative review prior to commitment to one site, the desirability of a requirement for exploration and in situ testing at depth would be significantly diminished. The proposed regulations help ensure that the commitment of a particular investigative and design team to an individual site will not be

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<sup>3/</sup>See, Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1977).

controlling, because there will be a comparative review of several alternatives that have been studied to the same extent.

The intent of the proposed provisions for state and general public involvement in the NRC's reviews of DOE's plans are also highly desirable. The federal government in the past gave too little attention to the advice and concerns of state officials, independent scientists and the general public, particularly at the early stages of investigating and developing facilities for long-term storage or disposal of radioactive wastes. Had early, independent comments been heeded about proposed sites at, for instance, Lyons, Kansas, tax dollars would not have been misspent on unsound approaches and progress toward safe disposal would have been much faster. Furthermore, confidence in the federal program, which is almost totally absent today, would have developed.

There are, however, fatal omissions in the proposed rule. In order for the stated objectives of the NRC to be fulfilled, and for the NRC to meet the Atomic Energy Act's (AEA) requirements to protect public health and safety, these serious deficiencies must be corrected in the final rule. In particular, (1) the final regulations should specify a minimum number of sites that must be characterized by the Department before an application to construct a repository can be docketed by the NRC; (2) all of the minimum number of sites should qualify under an early screening test to assure that they satisfy, to the extent possible prior to exploration and in situ testing at

depth, NRC's technical criteria for sites;<sup>4/</sup> (3) the regulations should explicitly identify the problems of conflict with natural resources, and other situations potentially leading to inadvertent human intrusion into a repository, as major issues to be discussed fully in site characterization reports and license applications; (4) the rule should explicitly state that in the event there is NRC dissatisfaction with a site characterization report, an application to construct a repository will not be docketed; and (5) DOE should be required to explore and investigate these multiple sites at depth.

Additionally, the discussion of the environmental impacts associated with site characterization preceding the proposed rule should be substantially improved, and the final regulations should improve the provisions for state participation in the NRC review process, particularly by "interested" states. Finally, we are concerned that the NRC has omitted discussion and formulation of policy on (1) the implementation of the National Environmental Policy Act (NEPA), as it applies to NRC's activities in licensing geologic repositories, and (2) provision of financial and other assistance to public interest groups that, with the availability of adequate resources, could

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<sup>4/</sup>The determination, based on information prior to exploration and in situ testing at depth, that sites are "qualified" should be made only after there has been a public hearing on the issue.



meaningfully contribute to the NRC's review of DOE plans.<sup>5/</sup> We urge the NRC to direct attention to these two important matters at the earliest possible time, because adequate policies on them are essential to a sound licensing approach.

The licensing procedures should not become final until the NRC's NEPA policy and program for providing assistance to intervenors is available. Moreover, the comment period on the proposed licensing procedures should remain open until the proposed technical criteria are available formally for public review and comment. These documents are integral to the NRC's overall regulatory program to assure high-level wastes will be disposed of safely. Piecemeal review of the NRC's approach is inherently unsatisfactory, prohibiting comprehensive and thorough analysis by the public.

I. The Proposed Licensing Procedures Should Require the Department of Energy to Characterize, Including Exploration and In Situ Testing at Depth, A Minimum Number of Sites.

The NRC prefaces its proposed regulations with the expectation that the Department will characterize "a minimum of three sites representing a minimum of two geologic media" in response

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<sup>5/</sup>Additionally, within the context of the proposed regulations, the NRC should maintain a current list of individuals and organizations that are interested in radioactive waste disposal or licensing matters. Written notification of the NRC's receipt of site characterization reports and license application should go to all those on this list automatically. Reliance on notices in the Federal Register are inadequate in this regard.

to the requirements of the National Environmental Policy Act (NEPA) to consider alternatives to a proposed action. (44 Fed. Reg. 70415; footnote.) NRDC concurs that NEPA requires DOE to evaluate fully several alternative sites in a variety of geologic environments. The proposed regulations, however, inexplicably do not themselves require the Department to consider several sites in a variety of different types of rock as matter important for protection of public health and safety. (See, 44 Fed. Reg. 70415; footnote.) We believe strongly that, pursuant to its obligation under the Atomic Energy Act to protect public health and safety, the NRC should require a specific, minimum number of sites that the Department must characterize. In particular, we urge the NRC to incorporate the recent Presidential directive, based on the recommendation of a majority of the Interagency Review Group on Nuclear Waste Management, to the Department to locate at least four sites in a variety of different geologic environments before selecting the first site for a repository.<sup>6/</sup> We interpret the phrase "a variety of geologic environments" in the Presidential "Fact Sheet" to mean that at least three different types of rocks have to be characterized.

The need for characterizing several sites in a variety of rock media is justified by more than the need to consider alternatives under the provisions of NEPA, although that is

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<sup>6/</sup>Office of the White House Press Secretary, "Fact Sheet, The President's Program on Radioactive Waste Management," p. 4 (dated February 12, 1980).

sufficient justification. Specifically, we believe that there are two more compelling reasons for characterization of several sites: (1) consideration of several sites in a variety of rock types provides critical information about the relative safety of different environments; and (2) characterization of several sites avoids Departmental momentum in favor of only one site and undue institutional commitment to only one proposal. These are issues at the heart of the NRC's responsibility to protect public health and safety under the requirements of the Atomic Energy Act.

There are significant gaps in our scientific knowledge about the geologic disposal of radioactive wastes. These uncertainties have potentially serious implications for the level of safety provided by geologic repositories. Predicting possible future releases of wastes from geologic repositories, furthermore, is an activity of unknown, but probably low, reliability and accuracy. To compensate, at least partially, for these problems in assessing safety, the NRC should assure that during the selection of a disposal environment the "best" of a set of qualified sites is selected.

To help assure that the selection of a site involves comparison of valid alternatives, the NRC should conduct a careful review of DOE's selection of sites for characterization. Before a final determination on whether DOE's sites are "qualified," the NRC should hold a public hearing to obtain the views of members of the public, interested organizations, independent scientists, Indian Nations, and local and state

governments. Such a procedure would help avoid the undue commitment of public funds to sites that could never be acceptable for construction of repositories. The basis for comparison should be NRC's as yet unreleased technical criteria for siting repositories. DOE should not be able to count as one of the minimum number of sites any that clearly violate the technical criteria.<sup>7/</sup>

The federal program in radioactive waste management, moreover, has suffered in the past from an inability to maintain flexibility and to consider a range of possible solutions for each step of the process ending in disposal. A requirement to characterize several sites in a variety of geologic environments, thus, is not only fully justified on safety and environmental grounds, it also would improve the likelihood of success of the Department's program.

The "supplementary information" to the proposed regulations concludes that, ". . . the data needed to establish the ultimate suitability of the site is likely to be obtained only through exploration and in situ testing at depth, i.e., in the proposed rock unit. . . . [W]ithout exploration and in situ testing in the proposed host rock unit, neither the defects nor the key parameters can be determined with confidence." (44 Fed. Reg. 70410). NRDC concurs with this judgement, which is

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<sup>7/</sup>As indicated in these comments, we believe that such a careful early screening test would disqualify Gulf Coast salt domes and the bedded salt site near Carlsbad, New Mexico.

amply justified by recent technical analyses.<sup>8/</sup> We are surprised, therefore, that the proposed regulations do not require DOE to conduct the necessary exploration and in situ testing at depth.

In conclusion, consistent with the recent decision of the President, we urge the Commission to revise its proposed rule so that the Department is required to characterize, through exploration and in situ testing at depth, a minimum of four qualified sites in three different rock media before an application to construct a repository is docketed.

II. The Environmental Impacts of Site Characterization Have Not Been Adequately Addressed by the Commission in the Proposed Rule.

The Commission states in its rationale for a site characterization report that the environmental impacts of site characterizations are "relatively insignificant" and that the principal impact will be the "management of the spoils from

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<sup>8/</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A (October 1978); J. O. Bradenheft, et al., U.S. Geological Survey, Geologic Disposal of High-Level Radioactive Wastes -- Earth-Science Perspectives, Circular 779 (1978); U.S. Environmental Protection Agency, Report of an Ad-Hoc Panel of Earth Scientists, The State of Geological Knowledge Regarding Potential Transport of High-Level Radioactive Wastes from Deep Continental Repositories, EPA/320/4-78-004 (June 1978); and Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).

excavation of an exploratory shaft" measuring 5000 cubic yards. (44 Fed. Reg. 70409; footnote 4.) This statement fails to consider the economic and political impacts of land withdrawals, and the potential impacts of aquifer disruption and reclamation of the site if subsurface exploration results in abandonment. Furthermore, the NRC's view that site characterization has insignificant environmental impact is inconsistent with other statements suggesting that the Department may decide to prepare an "environmental impact statement with respect to site characterization activities." (44 Fed. Reg. 70417.)

Thus, we believe that the Commission's evaluation of the potential environmental impacts of site characterization is incorrect. Undoubtedly, DOE will have to prepare an environmental impact statement on any proposed site characterization, pursuant to the requirements of NEPA. This NEPA statement, and a discussion of potential environmental consequences in its site characterization report, should be key elements of the NRC's review of DOE's plans. The potential environmental impacts during site characterization explicitly must be found acceptable, and there must be no preferable alternatives, before the NRC approves DOE site characterization reports.

III. The Provisions for State and Public Involvement in NRC's Review of DOE's Site Characterization Report Should Be Strengthened.

The proposed regulations in two key respects restrict the opportunity for states to participate in the NRC's review of

its characterization reports and license applications. First, a state's participation is subject to the "availability of funds" and "approval" by the Director of the Office of Nuclear Material Safety and Safeguards. (§ 60.83.) Second, such participation is limited to "affected states." (§ 60.62(b).) NRDC believes that neither restriction is appropriate or necessary. Indeed, these restrictions are likely to impede careful technical review of DOE's plans, and they are likely to erode further the already strained state-federal relationship. The NRC, instead of conditioning or restricting its assistance, should provide all interested, affected or host states with the assistance they need to participate effectively in the NRC's review of DOE's site characterization reports and license applications. Additionally, NRC should offer the same assistance to Indian Nations.

IV. The Proposed Regulations Should Explicitly Consider The Natural Resource and Human Intrusion Questions in Site Characterization Reports and License Applications.

Primarily because the principal focus of DOE's site selection program of DOE's Office of Nuclear Waste Isolation is on salt deposits, potential conflict with natural resources is a major concern in considering the adequacy of site characterization reports and license applications. DOE's advocacy of the WIPP site near Carlsbad, New Mexico, and its emphasis on salt domes for disposal of commercial wastes, underscore this concern. Yet, the proposed regulations do not address the

issue of potential conflicts over natural resources. This is a fatal omission. (See, § 60.21.) Indeed, consideration of this issue may be even more important in terms of finding an acceptable site than the other technical areas of concern currently identified in the proposed regulations. (§ 60.21(c).)

The final regulations should require, in DOE's site characterization reports and license applications, a full discussion of the presence and potential of natural resources as a threat to the integrity of the waste containment system. In particular, DOE should be directed to evaluate the probability and possible consequences of extraction of resources in the area of the proposed site, assuming that the human intruders are unaware of the presence of deposited radioactive wastes.

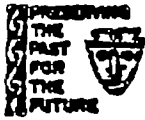
Submitted by:

  
Terry R. Lash

  
Georgia Yuan

TRL/GY/KJ





# ARKANSAS ARCHEOLOGICAL SURVEY

Director - Charles R. McGimsey III  
State Archeologist - Hester A. Davis

Coordinating Office  
University of Arkansas Museum  
Fayetteville, Arkansas 72701  
Phone: 501-375-3556

(13)

## MEMORANDUM

CORREY HUFFMAN

PROPOSED RULE

PR-2 ll ll  
(#PR 7040P)

TO: Secretary of the Nuclear Regulatory Commission

FROM: Hester A. Davis  
State Archeologist *[Signature]*

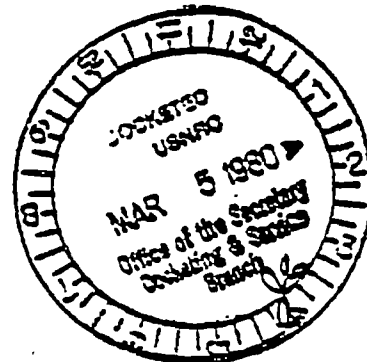
DATE: February 26, 1980

RE: Disposal of high-level radioactive wastes in geologic repositories;  
proposed licensing procedures

I am interested in the proposed licensing procedures, especially regarding how the cultural resource review process will be initiated. Although it is not explicitly stated in the proposed rules, I assume that a review by the State Historic Preservation Officer will be required in the early stages of site characterization, prior to earth disturbing activities. I think that some statement concerning the timing of State Historic Preservation Officer review should be made in the final procedures for radioactive waste disposal.

HAD/lcm

cc: State Historic Preservation Officer  
Thomas King



3/7 *[Signature]*

SHAW, PITTMAN, POTTS & TROWBRIDGE

1800 M STREET, N.W.

WASHINGTON, D. C. 20036

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RANSAY G. POTTS  
STUART L. PITTMAN  
GEORGE F. TROWBRIDGE  
STEPHEN G. POTTS  
GERALD CHARNOFF  
PHILIP C. BOSTWICK  
R. TIMOTHY HANLON  
GEORGE M. ROBERTS, JR.  
JOHN B. THORNTON  
BRUCE W. SHURDILL  
LESLIE A. NICHOLSON, JR.  
MARTIN G. KRALL  
RICHARD J. KENYAL  
JAY E. SILBERG  
BARBARA M. ROBERTS  
GEORGE V. ALLEN, JR.  
Wm. BRADFORD REYNOLDS  
FRED A. LITTLE  
FRED CRASNER  
NATHANIEL A. STEED, JR.  
MARK AUGENBLICH  
ERNEST L. BLAKE, JR.  
CARLETON S. JONES  
THOMAS A. SARTER  
JAMES H. BURGER  
SHELDON J. WEISEL  
JOHN A. McCULLOUGH  
J. PATRICK NICKY  
JAMES THOMAS LEHMART  
STEVEN L. MELTZER  
SEAN G. AULICK  
JOHN ENGEL

STEPHEN B. HUTTNER  
WINTHROP M. BROWN  
JAMES E. HANLIN  
ROBERT E. ZANLER  
RICHARD E. GALEN  
ROBERT S. ROSSINI  
STEVEN M. LUCAS  
NATHAN P. TRAVIESO-GHAI  
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JAY A. EPSTEIN  
RAND L. ALLEN  
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PAUL A. KAPLAN  
MARTY H. GLASSFELDER  
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PHILIP J. HARTY  
ROBERT M. GORDON  
JEANNE A. CALDERON  
BARBARA J. MORGAN  
BONNIE S. GOTTLES  
ALFRED M. POSTELL  
SETH H. HOGGASIAN  
SHOLA E. MCCAFFERTY  
JULIEA A. RIGGWAY  
KENNETH J. HAUTHMAN  
DAVID LAWRENCE MILLER

14

DOCKET NUMBER  
EXEMPT FROM RULE PR-2 et al  
(44FR 70408)

(202) 331-4000  
TELESCOPE  
(202) 336-0000 & 336-1700  
TELEX  
80-1003 (SHAWLAW WEN)  
CABLE "SHAWLAW"  
EDWARD S. CROSLAND  
COUNSEL

\*NOT ADMITTED IN D.C.

March 4, 1980



Secretary of the Commission  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch

Re: Proposed Licensing Procedures for  
Disposal of High-Level Radioactive  
Wastes in Geologic Repositories

Gentlemen:

On December 6, 1979, the Nuclear Regulatory Commission published for comment proposed regulations relating to the licensing procedures for the disposal of high-level radioactive wastes in geologic repositories. (44 Fed. Reg. 70408). The Federal Register notice invited comments on the proposal. On behalf of the Radioactive Waste Management Group, we are pleased to submit the comments which follow. The Radioactive Waste Management Group is composed of utilities who are operating, constructing and planning nuclear power reactors. The members of the Group are American Electric Power Company, Baltimore Gas and Electric Company, Duquesne Light Company, General Public Utilities Corporation (and its subsidiaries Jersey Central Power & Light Company and Metropolitan Edison Company), Kansas City Power & Light Company, Kansas Gas and Electric Company, Madison Gas and Electric Company, Northern States Power Company, Ohio Edison Company, Pennsylvania Power & Light Company, Rochester Gas and Electric Company, The Cleveland Electric Illuminating Company, Toledo Edison Company, Union Electric Company, Wisconsin Electric Power Company, Wisconsin Power & Light Company, and Wisconsin Public Service Corporation.

3/7 gr

Secretary of the Commission  
Page Two  
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The proposed regulations supersede the proposed General Statement of Policy on Licensing Procedures for Geologic Repositories for High-Level Radioactive Wastes (43 Fed. Reg. 53869, November 17, 1978). Comments filed on January 16, 1979 by the Radioactive Waste Management Group on the proposed General Statement of Policy commended the Commission for its diligent attempt to devise procedures which would meet the goals of maximizing public confidence while at the same time proceeding in an expeditious fashion with the waste management program. We did however recommend a number of changes in the proposed General Statement. We are pleased to note that some of these changes are reflected in the proposed regulations. Other problem areas however remain and new ones have been created. The following comments address our main areas of concern.

1. Alternative Sites

Both in the proposed regulations (see, e.g. proposed §51.40(d)) and in the Supplementary Information accompanying the proposal (see, e.g. 44 Fed. Reg. at 70411), the Commission states that "to satisfy the requirements of NEPA", it anticipates that there will be site characterization for "a minimum of three sites representing a minimum of two geologic media." The Commission also proposes that this multiple site characterization must be substantially completed before NRC will act on an application for construction authorization. We find no such requirement in NEPA and respectfully submit that NRC should not prejudge the nature or magnitude of the alternatives analysis which may be appropriate.

The current program of the Department of Energy is looking towards examination of a variety of sites in a variety of media. The President's February 12, 1980 policy statement on radioactive waste management codifies this approach.

Immediate attention will focus on research and development, and on locating and characterizing a number of potential repository sites in a variety of different geologic environments with diverse rock types. When four or five sites have been evaluated and found potentially suitable, one or more will be selected for further development as a licensed full-scale repository.

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However, the Commission's proposal appears to go beyond the President's program and will likely cause significant delays in the program with little offsetting benefits. We would make a number of points in this regard.

First, it is our opinion that NEPA does not require multiple site characterization of the type contemplated by the Commission. It must be borne in mind that "site characterization" in the context of the proposed regulations is an elaborate, time consuming process including

borings, surface excavations, excavation of exploratory shafts, limited subsurface lateral excavations and borings, and in situ testing. . .

Proposed §60.2(n). In other contexts, NRC has recognized that different levels of information may be available for alternatives and that the level of information which would be developed from a "site characterization" type process is not required for an alternatives analysis which meets NEPA requirements. This differing level of information was indeed the basis for the "obviously superior" standard developed in the Seabrook line of cases. See New England Coalition on Nuclear Power v. USNRC, 582 F.2d 87 (1st Cir. 1978) (recognizing the fact that "the proposed site will inevitably have been subjected to far closer scrutiny than any alternative site. . ."). Thus NEPA does not mandate that all alternatives studied be studied in the same detail.

Second, the Commission appears to require a higher level of site information on alternates than does the President's statement. The President's statement called for a finding of the potential suitability of four to five sites. This type of determination would not necessarily involve the high degree of data contemplated by the site characterization process with its requirements for exploration at depth of every site.

Third, the Commission underestimates the cost of the site characterization. A figure of \$20 million for a generic hypothetical site is presented. 44 Fed. Reg. at 70410. No basis for this cost is given. Even at this cost, the Commission is calling for expenditures in the neighborhood of \$100 million (since NRC expects DOE to present "a wider range of alternatives" than the three site minimum, 44 Fed. Reg. at 70411). Also, it is our opinion that the \$20 million

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figure is too low. We note that DOE has proposed to spend \$21 million in Fiscal Year 1981 alone on "further site characterization and protection of the sites" near Carlsbad, New Mexico, even though the Carlsbad site has been under study for many years.

Fourth, we are concerned that NRC is establishing perfection as the standard for siting decisions, rather than as a goal. Thus, NRC indicates its intent that DOE present the Commission with "a slate of candidate sites that are among the best that reasonably can be found." 44 Fed. Reg. 70410. The appropriate standard should be the selection of a site, chosen from among reasonable alternatives, which meets NRC's technical criteria. In determining the reasonableness of the alternatives, the NRC is entitled to -- and should -- consider the delay factor which could result from awaiting the discovery of the "best" sites. See Porter County Chapter of Izaak Walton League v. AEC, 533 F.2d 1011, 1017 (7th Cir.), cert. den. 429 U.S. 945 (1976).

## 2. NEPA Compliance

In our comments on the proposed General Statement of Policy, we urged that NRC in its NEPA review not reopen important generic issues treated by DOE. The Supplemental Information accompanying the proposed regulations states

The proposed regulations do not explicitly address the NEPA responsibilities of the Commission regarding matters within the scope of the Department's generic environmental impact statement on the management of commercially generated radioactive wastes. The possibility of adopting the Department's statement may be considered by the Commission, as suggested in comments, at an appropriate time.

44 Fed. Reg. at 70408. We continue to urge that the Commission make use of the "tiering", "lead agency" or "joint lead agency" concepts codified in the Council on Environmental Quality regulations to assure that NRC will not unnecessarily duplicate DOE's efforts.

Multiple levels of review are already built into generic decisionmaking on waste management (i.e., DOE, Interagency Review Group, the President, Congress, the State

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Planning Council, and individual states). Yet another layer of review (NRC's reexamination of generic decisions in the course of NEPA process) will add little except the opportunity for delay. Questions involving the timing of repository development, regional siting, the scope and future of the commercial nuclear program, and the like ought to be excluded from NRC NEPA analyses based upon their consideration in DOE NEPA reviews. Similarly, disposal technologies other than mined geologic repositories ought not to be considered by the Commission since those alternatives are not likely to be available in the foreseeable future. 44 Fed. Reg. at 70411. The scope of NRC's NEPA responsibilities should be clearly delineated in advance. This will avoid needless arguments at later stages of the process.

### 3. Site Characterization Review

Our comments on the proposed General Statement of Policy supported the concept of informal NRC-DOE interaction in advance of formal licensing. The proposed regulations have expanded this informal mechanism considerably. We still believe that interagency consultation at an early stage is important. We would express a concern that the process not be made unnecessarily rigid and overproceduralized.

Proposed §60.11 would require DOE to submit a site characterization report "[a]s early as possible after commencement of planning for a particular geologic repository operations area, and prior to site characterization. . . ." Since activities which NRC might consider "site characterization" have already been carried out at some potential repository sites (such as Carlisbad, New Mexico) and may be carried out at others before the proposed regulations are adopted, the proposed regulation should reflect this fact.

The proposed scope of the site characterization report could also be usefully narrowed in some areas without compromising its purpose. For instance, section 60.11(a) calls for the report to include the identification and location of alternative media and sites on which DOE intends to conduct site characterization for which DOE anticipates submitting subsequent site characterization reports. This would seem to unnecessarily delay DOE from submitting a site characterization report for one site until it had identified all other alternate sites which it wanted to characterize. The process could lead to a "convoy" system where the slowest

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paced site governs the timing for every other site. This is of particular concern in the context of the proposed regulations because of their prohibition on the conduct of site characterization activities prior to Staff review. It is not clear why information on alternative sites is relevant at the site characterization stage. Research and development on waste forms, another item required to be included in the site characterization report, would also seem to be of relatively minor relevance at the site characterization stage.

Two minor comments on site characterization are also appropriate. First, a maximum time period (perhaps 90 days) should be provided for comments on the draft site characterization analysis, in addition to the minimum comment period of 60 days specified in §60.11(e). Second, §60.11(f) should provide that any objections by the Staff on the site characterization report do not affect the authority of the Commission, Appeal Boards, Licensing Boards, etc. This would provide the necessary symmetry to the provision in §60.11(f) that a "no objection" finding does not affect the authority of the Commission.

#### 4. Scope of information for license application

Proposed Section 60.21 describes the information to be included in the application for construction authorization. In general, the regulations do not explicitly reflect the preliminary nature of some of the information which will be available. In some cases, the information requested seems to be overly detailed for a preconstruction stage.

In the reactor licensing context, 10 CFR §50.34(a) acknowledges that the construction permit application may contain "preliminary" information. Thus the preliminary safety analysis report may include the "preliminary design of the facility", §50.34(a)(3), a "preliminary analysis and evaluation of the design and performance of structures, systems and components", §50.34(a)(4), a "preliminary plan for the applicant's organization", §50.34(a)(6), and a discussion of "preliminary plans for coping with emergencies", §50.34(a)(10). Proposed Part 60 does not contain comparable language. Indeed, the language of §60.24(a) that the application be "as complete as possible in light of information that is reasonably available at the time of submission" could be read to imply the need to go beyond the preliminary information more typical of the pre-construction stage. Some of the requested categories of information in §60.21

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would not seem necessary, at least in full detail, at the construction authorization stage. These include emergency plans, §60.21(c)(9), nuclear material accounting and control, §60.21(c)(10), retrieval plans and alternate storage, §60.21(c)(11), organization, §60.14(c)(i), and decommissioning, §60.21(c)(14)(vii). We would also recommend that the findings to be made by the NRC in issuing a construction authorization, described in §60.31, be tailored to the preliminary nature of information in these areas.

5. Other comments

In addition to these major areas of comment, we would like to point out several other provisions where changes should be made.

- a. §60.2(i): Spent fuel should be characterized as "high-level radioactive waste" only where the determination has been made to permanently dispose of the specific spent fuel assemblies. This will avoid disputes as to whether spent fuel is "radioactive waste" under circumstances where permanent disposal is not intended.
- b. §60.21(a): The proposed regulation should allow DOE to submit a site specific environmental impact statement, if one has been prepared, in place of the environmental report now called for. (This comment would of course not apply if the more fundamental NEPA-related changes discussed above are made).
- c. §§60.33(b) and 60.45(b): These provisions, dealing with amendments to construction authorizations and licenses, should incorporate the "significant hazards" language for pre-noticing now found in the analogous Part 50 provision, §50.91.
- d. §60.43(b): The proposed regulation would require that license conditions cover "restrictions as to location, size, configuration and physical characteristics . . . of the storage medium". These would seem to be governed by the nature of the site selected. Thus, license conditions would be unnecessary.



SHAW, PITTMAN, POTTS & TROWBRIDGE

Secretary of the Commission  
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March 4, 1980

- e. §60.71(c): The reporting requirement for deficiencies should specify the timing of such reports. Presumably the timing could parallel that established in 10 CFR §50.55(a).

We appreciate the opportunity to submit these comments.

Very truly yours,



Jay E. Silberg  
Counsel for the Radioactive  
Waste Management Group



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Office of Energy  
P. O. Box 10588  
Jackson, Mississippi 39208  
(601) 987-6080

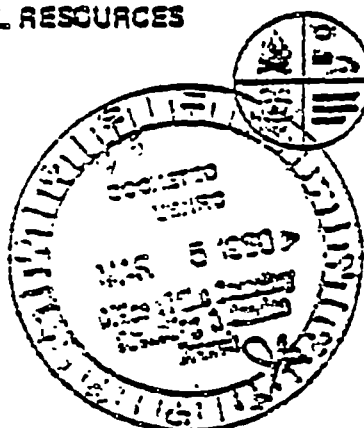
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March 3, 1980

PHONE NUMBER

PROJECT NUMBER 11-2 et al  
(44PR 70402)

Secretary  
Nuclear Regulatory Commission  
Washington, D. C. 20535



Attn: Bookkeeping and Services Branch

Dear Sirs:

RE: COMMENTS ON PROPOSED RULE FOR DISPOSAL OF  
HIGH-LEVEL RADIOACTIVE WASTE (HLW) IN GEOLOGIC  
REPOSITORIES; PROPOSED LICENSING PROCEDURES

The present approach to the HLW Disposal process evidenced by the proposed licensing procedures outlined in FR, Vol 44, No. 236 is an action in the proper direction. The Mississippi Office of Energy supports the concept of the NRC's involvement in expanded site characterizations rather than provisional construction authorizations and in the review of the Department of Energy's plans for site characterization and site selection procedures, methods and criteria prior to the use of such procedures, methods, and criteria.

There are, however, several comments and questions that deserve additional attention:

- 1) It is most important at the state and local level that agency representatives and citizens in general have a clear understanding of the roles to be played by DOE, NRC, EPA, and other federal agencies that might be involved. The process now defined tends to cloud and distort the view as to these roles.

Some overview of these relationships should be made an ongoing part of any state and local public hearing and/or meetings.

- 2) There are presently several site characterization decisions in progress by DOE, including three sites in Mississippi. The site characterization reports under the pre-application review should apply in retrospect to these efforts.
- 3) The site characterization report does not address directly the problems of site-related impacts, such as transportation, economic and social, on the local and state infrastructure and population. This should be specifically addressed in any site characterization report.

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Secretary, Nuclear Regulatory  
Commission

Page 2

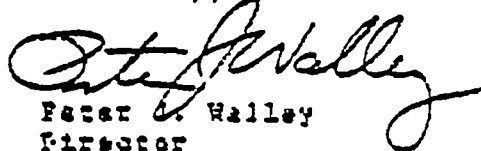
March 3, 1980

- 4) The contents of license applications require plans for coping with radiological emergencies. These types of plans place a considerable amount of responsibility for planning on the state and local governments. The extent and scope of the plans should be defined as in those regulations required for nuclear commercial power reactors.
- 5) In the license amendment to decommission the description of the program for post-decommissioning monitoring should be more specific and require some minimum level of activity in perpetuity.
- 6) The general tone of the Subpart C--Participation by State Governments--gives the impression that state and local governments are that of observers and occasional participants provided they generate enough activity.

The consultation process should give the state a stronger, more formalized role in the activities of site characterization, particularly those that relate to site specific data as opposed to generic data. The concurrence part of the consultation and concurrence process would then be addressed by any state and/or federal laws in place. The consultation definition and process should be made clearer to the extent that the state has the procedure available to recommend specific courses of action whereupon the Director of the NRC's Office of Nuclear Materials Safety and Safeguards would respond in writing as to why a particular recommendation was not taken, if so. This would define the state participation program in a formal sense. This, of course, would then modify the approval of proposals process (Section 60.83).

Please be assured that Mississippi is vitally concerned with this process and will provide additional comments and concerns as the issue narrows.

Sincerely,

  
Peter C. Walley  
Director

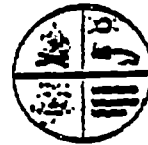
FJV/js

cc: Governor William Winter  
Attorney General William A. Allain  
Mississippi Congressional Delegation



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Bureau of Geology  
P. O. Box 5348  
Jackson, Mississippi 39216  
(601) 354-6223



March 3, 1980

United States Nuclear Regulatory Commission  
Office of the Secretary  
Washington, D. C. 20555

Attn: Licensing and Service Branch

Re: Comments on Proposed Rules for NRC Licensing Procedures  
for Nuclear Waste Repositories

Mr. Secretary:

These proposed rules are intended to present requirements applicable to the Department of Energy in submitting an application for a license for a nuclear waste repository. The proposed rules also set forth provisions for consultation and participation in the license review by State Government. With reference to the State participation, it is stated, "the Commission has undertaken a thorough review of the matter and now proposes a more extensive informal involvement during early phases of site characterization and a deferral of formal proceedings until site characterization has been completed." The term informal involvement appears to be somewhat out-of-step with previously stated ideas that target States would be actively involved by being assured of having the opportunity to engage in the decision making process. This idea is even stated in these proposed rules under the Site Characterization Review section. We object to the term informal involvement, especially, if the Federal government (including The President) is sincere in its many statements relative to the States' role of "consulting partners" to the Federal government in matters concerning nuclear waste repositories.

We fully agree with the concept of the Nuclear Regulatory Commission, as well as the States, having the opportunity to consult in and review the site characterization studies to help insure adequate data and safeguards are obtained before a site is finally selected.

It is stated in the Scope of Proposed Rule section, "The technical criteria against which the license application will be reviewed are still under development." Are the States going to be consulted during the development of these criteria, as we have been led to believe? If so, why isn't it indicated in the rules? If not, why not?

It is stated once the wastes have been emplaced the Department of Energy may submit an application to decommission the site. There is no mention of a long-term monitoring system. Will the site be monitored and will the States be involved in the design of same? Will appropriate State agencies be involved in any way in the monitoring process?

United States Nuclear Regulatory Commission  
March 3, 1980  
Page 2

Under Subpart D, Section 60.71 - Records and Reports - Why not also notify the affected State of any deficiency found in the site?

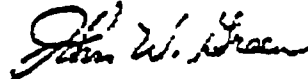
Section 60.73 - Inspections - Section states the Department of Energy shall allow the Nuclear Regulatory Commission to inspect on the premises of the repository. Why not allow appropriate State representatives to accompany on such inspections?

Obviously, we have the idea States are being excluded as much as possible in these matters which are of great concern to them. We sincerely hope the States can be involved in these matters which could have an economic, social and safety effect on them for centuries to come.

We appreciate the opportunity of reviewing these Proposed Rules.

Sincerely

BUREAU OF GEOLOGY



John W. Green  
Environmental Geologist

JWG:js

cc: Hon. William A. Allain  
State Attorney General

Alvin P. Bicker, Jr.  
Acting Director  
Bureau of Geology

**EXXON NUCLEAR COMPANY, Inc.**

777 - 106th Avenue N.E., C-00777, Bellevue, Washington 98009, Telephone (206) 453-4300

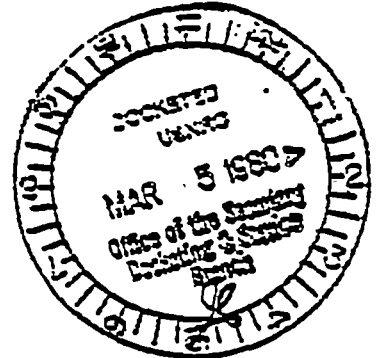
RAY K. ROBINSON  
Vice President

UNITED STATES

RECEIVED MAR 5 1980  
*2-24-80*  
*(44 FR 70408)*

16

29 February 1980



Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

Subject: Proposed 10 CFR 60, "Disposal of High-Level Radioactive Waste in Geologic Repositories"

Gentlemen:

We are pleased to comment on the Commission's proposed new Part 60 to Title 10 of the Code of Federal Regulations.

In general, Part 60 appears to conform to the precepts embodied in Part 50, which governs the licensing of production and utilization facilities. However, unlike Part 50, Part 60 introduces what many will view as an inappropriate burden of policy issues in addition to the concepts normally found in the CFR involving strictly procedural matters and technical criteria. In particular, we believe that it is unnecessary for the Commission to address the policy-related issue as to the number of fully characterized high-level radioactive waste sites in these proposed new regulations.

It would seem to us that the NEPA process (to which DOE must adhere) would allow a site selection process involving a candidate site which adequately meets reasonable technical site criteria previously promulgated by the regulations and was the only site which had been subjected to an extensive and detailed site characterization process. Such an approach is entirely consistent with a total systems evaluation which takes into account the beneficial role of stabilized waste forms, engineered barriers, and other engineered considerations in meeting disposal criteria.

To the extent that the Department of Energy, to prudently manage a program for which it is the designated lead agency, may elect to investigate one or more backup sites and address these alternate sites and plans for investigating them in its site characterization report should

Acknowledged by card... *3/7* *g*

Attachment

Additional Comments on 10 CFR 60

1. 60.2(c), 60.51 and 60.52

The term "Decommissioning" has a significantly different meaning in this Part than it has for other types of facilities. We would rather see a different term used to identify the activities of "Final backfilling of subsurface facilities, sealing of shafts, and decontamination and dismantlement of surface facilities". On the other hand, if it is intended to actually terminate (60.52 uses the word "may") such licenses when the above-mentioned activities are complete, the term may be appropriate.

2. 60.2(a) and 60.21(c) (12)

By definition, there will be "no intent to retrieve HLW for resource values," however, 60.21(c) (12) requires "a description of plans for retrieval and alternate storage . . ." If retrieval capabilities have to be incorporated into such facilities, the definition of "disposal" should be made consistent with that intent.

3. 60.2(i)

We recommend that the definition of HLW be made consistent with IRG's definition which says (in part): "HLW are either intact fuel assemblies that are being discarded after having served their useful life in a nuclear reactor . . ." The concept of "discard" is missing in NRC's definition.

4. 60.11(f)

It is indicated that the Department may prepare an environmental impact statement; however, per 10 CFR 51, this is a function of the NRC for other licensing actions under Part 50, 70, etc.

The process of site characterization should not require the submittal of an EIS. Using 60.2(n)'s definition of site characterization, it seems likely that this activity would be exempted from NEPA procedures under 10 CFR 1021.5 which provides NEPA exemption for classes of DOE activities, specifically 1021.5(d)(9) information gathering, analysis and dissemination and 1021.5(d)(11) actions in the nature of conceptual design or feasibility studies.



STATE OF CONNECTICUT  
 DEPARTMENT OF ENVIRONMENTAL PROTECTION  
 STATE OFFICE BUILDING HARTFORD, CONNECTICUT 06115



DOCKET NUMBER  
 PROPOSED RULE PR-2 et al (17)  
 (44 FR 90408)

February 28, 1980

Mr. Michael Bell  
 High Level Waste Technical  
 Development Branch  
 Division of Waste Management  
 U.S. Nuclear Regulatory Commission  
 Washington, D.C. 20555

Dear Mr. Bell:

I have had the opportunity to review the Federal Register Notice concerning the Disposal of High Level Radioactive Wastes in Geological Repositories Proposed Licensing Procedures.

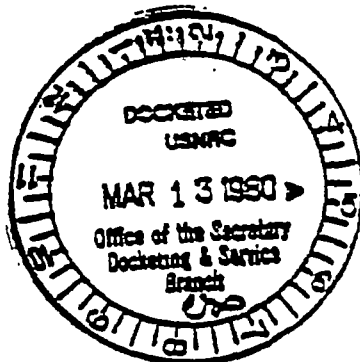
I was pleased to see the provisions made for State participation in the entire regulatory procedure.

I do not believe, however, that it will ever be appropriate for the U.S. Nuclear Regulatory Commission to terminate a license for a repository after decommissioning. Provisions must be made for adequate federal funding to support a monitoring and possible control program to be administered by the State after decommissioning.

Very truly yours,

*Arthur T. Heubner*

Arthur T. Heubner  
 Director, Radiation Control



ATH/mp1

Acknowledged by card: 3-14-80





# United States Department of the Interior

GEOLOGICAL SURVEY  
RESTON, VA. 22092

In Reply Refer To:  
EGS-Mail Stop 410

OC: ...  
PROPOSED RULE PR-2, etal  
44 PR 70408  
FEB 2 1980

18

Mr. Samuel J. Chilk, Secretary  
Office of the Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Dear Mr. Chilk:

This letter is in response to the Federal Register notice (Vol. 44, No. 36, dated December 6, 1979) inviting public comment on a proposed rule for licensing the receipt and disposal of high-level radioactive wastes (HLW) at geologic repositories (10 CFR Part 40 Subparts A-D). The staff of the U.S. Geological Survey (USGS) has reviewed those parts of the rule involving earth-science issues.

In general, the USGS endorses the procedures set forth in the proposed rule. They have been formulated to take account of the fact that disposal of radioactive waste in mined repositories requires new technology that must be developed in a stepwise, conservative manner. Each major step in the licensing provides opportunities for reevaluation of previous analyses and judgments; State and local officials and the general public will be involved in these reevaluations.

A major issue in the regulatory philosophy under development is the proposed requirement to characterize a number of sites in appropriate media by in situ tests at depth before selection of the repository site and issuance of a license to construct. The USGS supports these requirements. The enclosed comments offer more specific technical justifications for our endorsement of the proposed in situ testing requirements, together with some suggestions on technical approaches.

Sincerely yours,

H. William Menard  
Director



Enclosure

Administrated by card: 3-14-80

Comments by U.S. Geological Survey (USGS) on a Proposed Rule for  
Licensing the Receipt and Disposal of High-Level Radioactive  
Wastes (HLW) at Geologic Repositories

Although the U.S. Department of Energy had been planning to conduct in situ tests early in the construction of any repository, the USGS feels it is useful to require collection of such data at a number of sites prior to full adjudicatory hearings of the licensing process. Those hearings can then proceed on the basis of critical, site-specific data on the candidate host rocks and their environs rather than on inferences derived from a limited number of drill holes supplemented by remote geophysical techniques. Characterization of geologic media is a particularly difficult problem in geotechnical engineering because of the ever-present possibility of lateral changes in the properties of host rocks and the possible presence of inhomogeneities too small to detect by remote or borehole techniques. Direct observation and in situ tests of host media will be the only way to characterize sites with confidence. Tests that should be conducted at or near the repository horizon include: thermomechanical and coupled thermomechanical-thermohydrologic response of the host rock and adjacent formations; hydrologic properties of the host rock and adjacent formations; tests for emplacing, monitoring, and retrieving waste packages; tests of possible interactions between the waste canisters and the rock fluid; and field tests of geochemical reactions which retard radionuclide migration both in the near- and far-fields.

At this point, a statement of caution is necessary. The Commission will have to have clearly defined objectives for these tests so that they are not required to continue for unduly long periods and do not damage the potential isolation characteristics of the host rock. For the first repository, a conservative strategy would be to substantially limit the thermal load and maximum temperatures in the repository. Thermal tests of repository design could therefore be conducted at relatively low temperatures. Some limited higher temperature tests might be useful to set limits on model parameters.

In order to make a meaningful comparison of a number of potential repository sites in a variety of different geological environments, as required by the President's comprehensive waste management plan of February 12, 1980, in situ tests at repository depths will be necessary at four to five sites. Although costly and time-consuming, such characterization at four to five sites will be necessary for a valid consideration of alternatives under the National Environmental Policy Act. The costs of such characterization will certainly not represent wasted funds. If characterization shows that an initially promising site is in fact not suitable, much of value will be learned. If characterization shows a site to be suitable, it can be reserved for later use as a repository if it is not selected for the first.

Although not strictly an earth-science matter, we note in passing that the proposed regulations do not consider possible interfaces with existing regulations governing Federal lands, specifically the Federal Land Policy and Management Act of 1976.

UNIVERSITY OF CALIFORNIA, BERKELEY

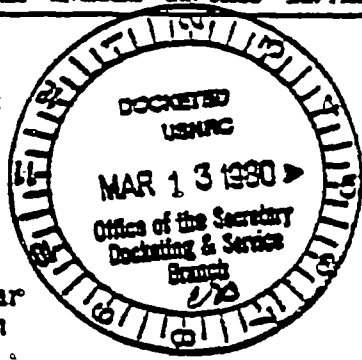
DOCKET ..  
PROPOSED RULE PR-9, et al (19)  
(44 FR 70909)  
SANTA BARBARA • SANTA CRUZ

BERKELEY • DAVIS • IRVINE • LOS ANGELES • RIVERSIDE • SAN DIEGO • SAN FRANCISCO



DEPARTMENT OF MATERIALS SCIENCE  
AND MINERAL ENGINEERING

HEARST MINING BUILDING  
BERKELEY, CALIFORNIA 94720  
(415) 842-3801



February 28, 1980

Secretary of the Nuclear  
Regulatory Commission  
Washington, D.C. 20555  
Attention: Docketing and Service Branch

Dear Sirs,

Disposal of High-level Radioactive Wastes  
in Geologic Repositories:  
Proposed Licensing Procedures  
Comments on Proposed rule, Federal Register Vol. 44, No. 236

It would be inappropriate and unjustifiable to burden the Department of Energy with unnecessary costs and delays in their efforts to develop a geologic repository for the disposal of radioactive wastes. Nevertheless, I find myself in broad agreement with the stance of the Nuclear Regulatory Commission as enunciated in the above proposed rule.

Although full use must be made of such existing experience and precedent as is relevant, it must be recognized the disposal of radioactive wastes in geologic repositories is novel and involves many issues and factors lying outside the realm of current experience. Because of this and the sensitivity of the public to waste disposal, special actions and precautions are needed.

In principal, these actions and precautions should have two primary objectives. First, to obviate our lack of experience, particularly in the field, and thereby to broaden our understanding of the nature of this issue. Second, to guard against the unexpected.

The initial technical identification of potential sites must be made on the basis of surface geological and geophysical exploration with, perhaps, limited test drilling. However, it seems to be accepted by experts and laymen alike that the amount and quality of data that can be so obtained is not sufficient to make anything approaching an adequate appraisal of the site. Accordingly, at this level of information it is not practicable to select potentially acceptable sites on technical grounds.

It is generally agreed that site specific technical information of the kind necessary to decide whether or not a site is suitable for the development of a waste repository can be obtained only from exploration and testing at the depth below surface of the proposed repository. In terms of the President's recent Report on His

Acknowledged by card: 3-14-80

Secretary of the Nuclear  
Regulatory Commission  
page 2

Proposals for a Comprehensive Radioactive Waste Management Program, the Department is directed to evaluate and find four or five sites in a variety of different geologic environments with diverse rock types to be suitable before one or more will be selected for further development as a licensed full-scale repository. This is tantamount to a directive from the President for the DOE and NRC to proceed in accordance with the proposed rule.

Having accepted that the data needed to establish the suitability of a site can be obtained only through exploration and testing at depth, it follows such exploration and testing will have to be done at a number of sites in different geologic media. Otherwise, there is no technical basis for choosing any particular site or medium as offering greater probabilities for the development of a successful repository than any other site or medium. In the absence of relevant hard data meaningful comparisons between different sites cannot be made.

Even underground exploration and testing cannot provide sufficient data to prove that a site will ultimately be adequate and safe for a waste repository. Once a site has been accepted on the basis of such exploratory data, new information will be forthcoming as excavation and engineering measurements proceed. It is most important that mechanisms for the collection of these data and their evaluation be mandated, so to minimize the chances of some adverse feature being overlooked and let pass without correction, or, if sufficiently serious, allowing development of the repository to proceed when, in fact, it should be abandoned.

The proposed rule correctly identifies two of the most important factors in ensuring adequate isolation, namely, the waste form and the (geochemical and hydrological) characteristics of the site. Quantitative information on these factors is essential to any evaluation of the suitability of a site to isolate radioactive wastes from the biosphere.

In addition to the fundamentally important characteristics of the waste form and the site, it is equally important that field techniques for excavation, emplacement of the waste, backfilling and sealing of the access ways and shafts be shown to be capable of practical implementation, and that their performance be shown to be adequate, before any decision concerning the acceptability of a repository can be made. Furthermore, the performance of engineered barriers to prevent the release of fission products and, perhaps, the long term release of radioactive materials should be assessed in the same context.

In summary, the development of geologic repositories for the disposal of radioactive wastes is an engineering venture into the unknown. The repercussions of even partial failure could be disastrous. Exceptional caution and care are, therefore, fully justifiable especially as they comprise only a direct cost, and do not incur continuing and unnecessary costs as would excessive factors of safety in the design of an aircraft.

Yours sincerely,

Neville G. W. Cook  
Neville G.W. Cook

Atomic International Division  
Energy Systems Group  
5900 De Soto Avenue  
Canoga Park, CA 91304  
Telephone: (213) 341-1000  
TWX: 910-494-1237  
TELEX: 181017



Rockwell  
International

DOCKET NUMBER  
PROPOSED RULE PR-2 metal (20)  
(44 FR 70408)

February 28, 1980

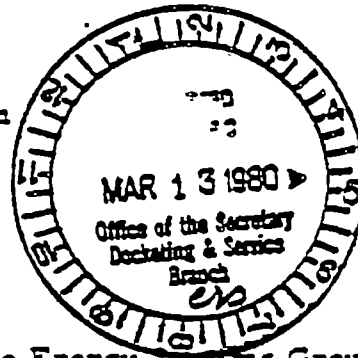
In reply refer to 80ESG-1978

Secretary of the Nuclear  
Regulatory Commission  
Washington, D. C. 20555

Attention: Docketing and Service Branch

Dear Sirs:

Subject: Comments on Proposed  
Rule 10 CFR 60



The Atomic International Division of the Energy Systems Group of Rockwell International Corporation is pleased at the opportunity to comment on the proposed rule for Disposal of High-Level Radioactive Wastes in Geologic Repositories as published in the Federal Register, Volume 44, Number 236, pages 70408-70421 on Thursday, December 6, 1979. Our comments are of a general nature; however, if any or all are adopted, specific changes to 10 CFR 60 will be required. Our comments are divided into three categories: (1) Repositories; (2) Decision Making; and (3) Waste Forms.

#### 1. Repositories

We would like to express our concern that the proposed rule-making appears to require that the "best" available site be selected. This is accomplished by requiring full site characterization of a number of sites and geologic media (minimum of three, but an implication of many more than three) before selecting any site. We believe that technical criteria should be established to limit any release to the biosphere to less than is now legally acceptable under 10 CFR 20. Then, if a site and its proposed waste form can be shown to meet the technical requirements, it should be deemed acceptable as a repository. To continue to search for the "best" will be fruitless in this ever improving technological world we live in.

Acknowledged by card: 3-14-80

One of our major concerns is that by using a "best" requirement, any obstructionist organization can effectively block progress in constructing a safe repository.

Another concern of ours is the requirement that during construction, the repository is evaluated for conformance with the design. It is our understanding that mines (and in essence a geologic repository is a mine) are usually "developed" and cannot be "designed" in detail without extensive exploratory drilling. We believe that this exploratory drilling should be done during the site characterization phase and in sufficient depth to permit the design of the mine. It should be recognized that design changes will probably be required as the mine is developed, as the exploratory drilling and mining cannot cover all contingencies.

## 2. Decision Making

We also believe that the proposed rule-making can lead to long delays before decisions are made. For example, on page 70409, second column, the four paragraph ends with "without undue schedule delays." We suggest that it might be advisable to specify a time limit for the various parties (state and public) to respond so that the hearings proceed expeditiously.

## 3. Waste Forms

The proposed rule also requires that the Department address and compare alternative waste forms. We concur that DOE should continue to develop better and better waste forms; however, our concern here is also that the "best" will be required and that the "best" form will always be something not quite developed. We believe that, as with site selection, specific technical criteria should be established to limit the release from the waste form. Once a waste form is demonstrated to meet these technical requirements, it should be certified for burial in a repository.

80ESG-1978

February 28, 1980

Page 3

We hope that our comments will be of value to you in developing this most difficult section of the Code of Federal Regulations.

Very truly yours,



D. G. Mason  
Programs Director  
Fuel and Waste Management

# Natural Resources Defense Council, Inc.

25 KEARNY STREET

SAN FRANCISCO, CALIFORNIA 94108

415 421-6561

PROPOSED RULE

PR-2, et al (21)

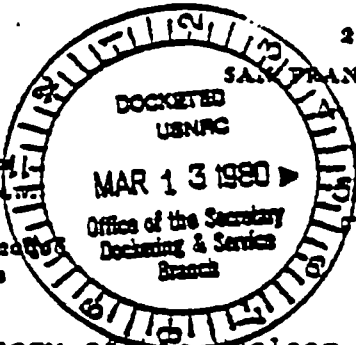
44 FR 70408

New York Office

122 EAST 43RD STREET

NEW YORK, N.Y. 10017

212 949-0649



Washington Office  
1725 I STREET, N.W.  
SUITE 500  
WASHINGTON, D.C. 20006  
202 253-8210

Office of the Secretary  
Docketing & Service  
Branch

February 29, 1980

Secretary of the Nuclear Regulatory Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

Re: Disposal of High-Level Radioactive Wastes in  
Geologic Repositories; Proposed Licensing  
Procedures (44 Fed. Reg. 70408; December 6, 1979)

The Natural Resources Defense Council (NRDC) hereby submits its comments on the Nuclear Regulatory Commission's (NRC or the Commission) proposed licensing procedures for the disposal of high-level radioactive wastes in geologic repositories. The development of both these licensing procedures and the upcoming safety standards for repositories are urgently needed to guide the on-going activities of the Department of Energy (DOE or the Department) in selecting possible sites for geologic repositories. Unfortunately, due in large part to the absence of such procedures and safety standards, the Department continues an inadequate approach to the selection of potential sites for geologic repositories.<sup>1/</sup>

<sup>1/</sup>In particular, NRDC finds the Department's emphasis on salt domes in the Gulf Coast region highly ill-advised. Salt domes are inherently unstable formations, are often associated with significant natural resources, (footnote continued on next page)



The Commission's proposed rule is a significant improvement over the earlier proposed general statement of policy. (43 Fed. Reg. 53869; November 17, 1978.) We applaud the overall approach incorporated in the proposed rule, and we congratulate the Commission on a job basically well done. NRDC strongly supports, in particular, the proposed step-by-step process for reviewing the Department's development of geologic repositories. This cautious approach, together with appropriate technical conservatism that we urge be incorporated in the upcoming technical criteria, is desirable because there is no experience in constructing geologic repositories anywhere in the world, and because there are known significant scientific uncertainties and gaps in knowledge about how to design, construct, and operate geologic repositories safely.<sup>2/</sup> Careful review at each initial stage in the selection of sites, construction and operation of repositories, and in the closure of repositories is necessary to protect public health and the environment adequately.

Also, geologic exploration and in situ testing at depth of several potential sites in different geologic media are an

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<sup>1/</sup>(cont. from page 1) are potentially valuable as storage facilities (as in the case of the strategic petroleum reserve), and they have the other disadvantages of salt, e.g., high solubility, low sorptive capacity, and inconvenience of maintaining ready retrievability of wastes. In our view, if DOE had had the benefit of adequate standards addressing the issue of natural resources and human intrusion, there would not be the current emphasis on salt domes.

<sup>2/</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A, page vi (October 1978).

essential component of regulations designed to protect the public health and safety of thousands of human generations to come. Important information about the possible future behavior of wastes emplaced in a deep geologic environment can be obtained only by study in that environment. Laboratory tests and investigations from the surface are useful and important, but they are also inherently limited. A high degree of assurance that wastes will remain isolated from the biosphere can be obtained only by extensive study deep underground at the actual site proposed for disposal.<sup>3/</sup>

An important aspect of the proposed approach is that there be investigation of several sites prior to selection of one for development, because this procedure will reduce the chance of undue institutional momentum accruing to a site that may be inferior. We believe that it was this concern that was behind the President's recent decision to cancel the Waste Isolation Pilot Plant, for instance. Indeed, without a provision for comparative review prior to commitment to one site, the desirability of a requirement for exploration and in situ testing at depth would be significantly diminished. The proposed regulations help ensure that the commitment of a particular investigative and design team to an individual site will not be

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<sup>3/</sup>See, Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).

controlling, because there will be a comparative review of several alternatives that have been studied to the same extent.

The intent of the proposed provisions for state and general public involvement in the NRC's reviews of DOE's plans are also highly desirable. The federal government in the past gave too little attention to the advice and concerns of state officials, independent scientists and the general public, particularly at the early stages of investigating and developing facilities for long-term storage or disposal of radioactive wastes. Had early, independent comments been heeded about proposed sites at, for instance, Lyons, Kansas, tax dollars would not have been misspent on unsound approaches and progress toward safe disposal would have been much faster. Furthermore, confidence in the federal program, which is almost totally absent today, would have developed.

There are, however, fatal omissions in the proposed rule. In order for the stated objectives of the NRC to be fulfilled, and for the NRC to meet the Atomic Energy Act's (AEA) requirements to protect public health and safety, these serious deficiencies must be corrected in the final rule. In particular, (1) the final regulations should specify a minimum number of sites that must be characterized by the Department before an application to construct a repository can be docketed by the NRC; (2) all of the minimum number of sites should qualify under an early screening test to assure that they satisfy, to the extent possible prior to exploration and in situ testing at

depth, NRC's technical criteria for sites;<sup>4/</sup> (3) the regulations should explicitly identify the problems of conflict with natural resources, and other situations potentially leading to inadvertent human intrusion into a repository, as major issues to be discussed fully in site characterization reports and license applications; (4) the rule should explicitly state that in the event there is NRC dissatisfaction with a site characterization report, an application to construct a repository will not be docketed; and (5) DOE should be required to explore and investigate these multiple sites at depth.

Additionally, the discussion of the environmental impacts associated with site characterization preceding the proposed rule should be substantially improved, and the final regulations should improve the provisions for state participation in the NRC review process, particularly by "interested" states. Finally, we are concerned that the NRC has omitted discussion and formulation of policy on (1) the implementation of the National Environmental Policy Act (NEPA), as it applies to NRC's activities in licensing geologic repositories, and (2) provision of financial and other assistance to public interest groups that, with the availability of adequate resources, could

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<sup>4/</sup>The determination, based on information prior to exploration and in situ testing at depth, that sites are "qualified" should be made only after there has been a public hearing on the issue.

meaningfully contribute to the NRC's review of DOE plans.<sup>5/</sup>

We urge the NRC to direct attention to these two important matters at the earliest possible time, because adequate policies on them are essential to a sound licensing approach.

The licensing procedures should not become final until the NRC's NEPA policy and program for providing assistance to intervenors is available. Moreover, the comment period on the proposed licensing procedures should remain open until the proposed technical criteria are available formally for public review and comment. These documents are integral to the NRC's overall regulatory program to assure high-level wastes will be disposed of safely. Piecemeal review of the NRC's approach is inherently unsatisfactory, prohibiting comprehensive and thorough analysis by the public.

I. The Proposed Licensing Procedures Should Require the Department of Energy to Characterize, Including Exploration and In Situ Testing at Depth, A Minimum Number of Sites.

The NRC prefaces its proposed regulations with the expectation that the Department will characterize "a minimum of three sites representing a minimum of two geologic media" in response

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<sup>5/</sup> Additionally, within the context of the proposed regulations, the NRC should maintain a current list of individuals and organizations that are interested in radioactive waste disposal or licensing matters. Written notification of the NRC's receipt of site characterization reports and license application should go to all those on this list automatically. Reliance on notices in the Federal Register are inadequate in this regard.

to the requirements of the National Environmental Policy Act (NEPA) to consider alternatives to a proposed action. (44 Fed. Reg. 70415; footnote.) NRODC concurs that NEPA requires DOE to evaluate fully several alternative sites in a variety of geologic environments. The proposed regulations, however, inexplicably do not themselves require the Department to consider several sites in a variety of different types of rock as a matter important for protection of public health and safety. (See, 44 Fed. Reg. 70415; footnote.) We believe strongly that, pursuant to its obligation under the Atomic Energy Act to protect public health and safety, the NRC should require a specific, minimum number of sites that the Department must characterize. In particular, we urge the NRC to incorporate the recent Presidential directive, based on the recommendation of a majority of the Interagency Review Group on Nuclear Waste Management, to the Department to locate at least four sites in a variety of different geologic environments before selecting the first site for a repository.<sup>6/</sup> We interpret the phrase "a variety of geologic environments" in the Presidential "Fact Sheet" to mean that at least three different types of rocks have to be characterized.

The need for characterizing several sites in a variety of rock media is justified by more than the need to consider alternatives under the provisions of NEPA, although that is

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<sup>6/</sup>Office of the White House Press Secretary, "Fact Sheet, The President's Program on Radioactive Waste Management," p. 4 (dated February 12, 1980).

sufficient justification. Specifically, we believe that there are two more compelling reasons for characterization of several sites: (1) consideration of several sites in a variety of rock types provides critical information about the relative safety of different environments; and (2) characterization of several sites avoids Departmental momentum in favor of only one site and undue institutional commitment to only one proposal. These are issues at the heart of the NRC's responsibility to protect public health and safety under the requirements of the Atomic Energy Act.

There are significant gaps in our scientific knowledge about the geologic disposal of radioactive wastes. These uncertainties have potentially serious implications for the level of safety provided by geologic repositories. Predicting possible future releases of wastes from geologic repositories, furthermore, is an activity of unknown, but probably low, reliability and accuracy. To compensate, at least partially, for these problems in assessing safety, the NRC should assure that during the selection of a disposal environment the "best" of a set of qualified sites is selected.

To help assure that the selection of a site involves comparison of valid alternatives, the NRC should conduct a careful review of DOE's selection of sites for characterization. Before a final determination on whether DOE's sites are "qualified," the NRC should hold a public hearing to obtain the views of members of the public, interested organizations, independent scientists, Indian Nations, and local and state

governments. Such a procedure would help avoid the undue commitment of public funds to sites that could never be acceptable for construction of repositories. The basis for comparison should be NRC's as yet unreleased technical criteria for siting repositories. DOE should not be able to count as one of the minimum number of sites any that clearly violate the technical criteria.<sup>7/</sup>

The federal program in radioactive waste management, moreover, has suffered in the past from an inability to maintain flexibility and to consider a range of possible solutions for each step of the process ending in disposal. A requirement to characterize several sites in a variety of geologic environments, thus, is not only fully justified on safety and environmental grounds, it also would improve the likelihood of success of the Department's program.

The "supplementary information" to the proposed regulations concludes that, ". . . the data needed to establish the ultimate suitability of the site is likely to be obtained only through exploration and in situ testing at depth, i.e., in the proposed rock unit. . . . [W]ithout exploration and in situ testing in the proposed host rock unit, neither the defects nor the key parameters can be determined with confidence." (44 Fed. Reg. 70410). NRDC concurs with this judgement, which is

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<sup>7/</sup>As indicated in these comments, we believe that such a careful early screening test would disqualify Gulf Coast salt domes and the bedded salt site near Carlsbad, New Mexico.



amply justified by recent technical analyses.<sup>8/</sup> We are surprised, therefore, that the proposed regulations do not, as they should, require DOE to conduct the necessary exploration and in situ testing at depth.

In conclusion, consistent with the recent decision of the President, we urge the Commission to revise its proposed rule so that the Department is required to characterize, through exploration and in situ testing at depth, a minimum of four qualified sites in three different rock media before an application to construct a repository is docketed.

II. The Environmental Impacts of Site Characterization Have Not Been Adequately Addressed by the Commission in the Proposed Rule.

The Commission states in its rationale for a site characterization report that the environmental impacts of site characterizations are "relatively insignificant" and that the principal impact will be the "management of the spoils from

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<sup>8/See</sup>, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A (October 1978); J. O. Bredenoft, et al., U.S. Geological Survey, Geologic Disposal of High-Level Radioactive Wastes -- Earth-Science Perspectives, Circular 779 (1978); U.S. Environmental Protection Agency, Report of an Ad-Hoc Panel of Earth Scientists, The State of Geological Knowledge Regarding Potential Transport of High-Level Radioactive Wastes from Deep Continental Repositories, EPA/520/4-78-004 (June 1978); and Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).

excavation of an exploratory shaft" measuring 5000 cubic yards. (44 Fed. Reg. 70409; footnote 4.) This statement fails to consider the economic and political impacts of land withdrawals, and the potential impacts of aquifer disruption and reclamation of the site if subsurface exploration results in abandonment. Furthermore, the NRC's view that site characterization has insignificant environmental impact is inconsistent with other statements suggesting that the Department may decide to prepare an "environmental impact statement with respect to site characterization activities." (44 Fed. Reg. 70417.)

Thus, we believe that the Commission's evaluation of the potential environmental impacts of site characterization is incorrect. Undoubtedly, DOE will have to prepare an environmental impact statement on any proposed site characterization, pursuant to the requirements of NEPA. This NEPA statement, and a discussion of potential environmental consequences in its site characterization report, should be key elements of the NRC's review of DOE's plans. The potential environmental impacts during site characterization explicitly must be found acceptable, and there must be no preferable alternatives, before the NRC approves DOE site characterization reports.

III. The Provisions for State and Public Involvement in NRC's Review of DOE's Site Characterization Report Should Be Strengthened.

The proposed regulations in two key respects restrict the opportunity for states to participate in the NRC's review of

its characterization reports and license applications. First, a state's participation is subject to the "availability of funds" and "approval" by the Director of the Office of Nuclear Material Safety and Safeguards. (§ 60.83.) Second, such participation is limited to "affected states." (§ 60.62(b).) NROD believes that neither restriction is appropriate or necessary. Indeed, these restrictions are likely to impede careful technical review of DOE's plans, and they are likely to erode further the already strained state-federal relationship. The NRC, instead of conditioning or restricting its assistance, should provide all interested, affected or host states with the assistance they need to participate effectively in the NRC's review of DOE's site characterization reports and license applications. Additionally, NRC should offer the same assistance to Indian Nations.

IV. The Proposed Regulations Should Explicitly Consider The Natural Resource and Human Intrusion Questions in Site Characterization Reports and License Applications.

Primarily because the principal focus of DOE's site selection program of DOE's Office of Nuclear Waste Isolation is on salt deposits, potential conflict with natural resources is a major concern in considering the adequacy of site characterization reports and license applications. DOE's advocacy of the WIPP site near Carlsbad, New Mexico, and its emphasis on salt domes for disposal of commercial wastes, underscore this concern. Yet, the proposed regulations do not address the

issue of potential conflicts over natural resources. This is a fatal omission. (See, § 60.21.) Indeed, consideration of this issue may be even more important in terms of finding an acceptable site than the other technical areas of concern currently identified in the proposed regulations. (§ 60.21(c).)

The final regulations should require, in DOE's site characterization reports and license applications, a full discussion of the presence and potential of natural resources as a threat to the integrity of the waste containment system. In particular, DOE should be directed to evaluate the probability and possible consequences of extraction of resources in the area of the proposed site, assuming that the human intruders are unaware of the presence of deposited radioactive wastes.

Submitted by:

Terry R. Lash

Georgia Yuan

TRL/GY/KJ

# Natural Resources Defense Council, Inc.

25 KERNY STREET  
SAN FRANCISCO, CALIFORNIA 94108  
415 421-6561

DOCKET NUMBER  
PROPOSED RULE

PR-2, et al (22)

44 FR 70408

New York Office  
122 EAST 42ND STREET  
NEW YORK, N.Y. 10017  
212 949-0049

Washington Office  
1725 I STREET, N.W.  
SUITE 600  
WASHINGTON, D.C. 20006  
202 293-8210

March 3, 1980

Secretary of the Nuclear Regulatory Commission  
U. S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

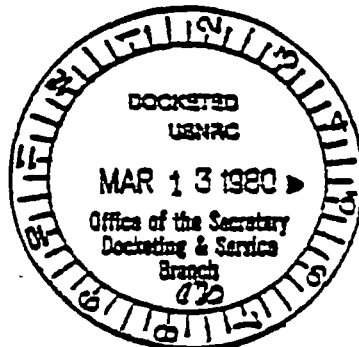
Re: Disposal of High-Level Radioactive Wastes in  
Geologic Repositories: Proposed Licensing  
Procedures (44 Fed. Reg. 70408; December 6, 1979)

There are three changes that should be made in the letter dated February 29, 1980, from the Natural Resources Defense Council, commenting on the above-captioned matter.

- 1) On page 3, footnote 3: the date in the last line should be 1979, not 1977.
- 2) Page 7, line 7: insert "a" between "as" and "matter".
- 3) Page 10, line 2: after "the proposed regulations do not" insert ", as they should,".

I enclose corrected copies of pages 3, 7 and 10, which you can insert into the original in place of the erroneous pages.

Please accept my apologies for this inconvenience.



Sincerely yours,

*Kathryn A. Jones*  
Kathryn A. Jones  
Secretary to Terry Lash

KAJ/hs

Acknowledged by card 3-14-80

essential component of regulations designed to protect the public health and safety of thousands of human generations to come. Important information about the possible future behavior of wastes emplaced in a deep geologic environment can be obtained only by study in that environment. Laboratory tests and investigations from the surface are useful and important, but they are also inherently limited. A high degree of assurance that wastes will remain isolated from the biosphere can be obtained only by extensive study deep underground at the actual site proposed for disposal.<sup>3/</sup>

An important aspect of the proposed approach is that there be investigation of several sites prior to selection of one for development, because this procedure will reduce the chance of undue institutional momentum accruing to a site that may be inferior. We believe that it was this concern that was behind the President's recent decision to cancel the Waste Isolation Pilot Plant, for instance. Indeed, without a provision for comparative review prior to commitment to one site, the desirability of a requirement for exploration and in situ testing at depth would be significantly diminished. The proposed regulations help ensure that the commitment of a particular investigative and design team to an individual site will not be

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<sup>3/</sup>See, Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).

to the requirements of the National Environmental Policy Act (NEPA) to consider alternatives to a proposed action. (44 Fed. Reg. 70415; footnote.) NROC concurs that NEPA requires DOE to evaluate fully several alternative sites in a variety of geologic environments. The proposed regulations, however, inexplicably do not themselves require the Department to consider several sites in a variety of different types of rock as a matter important for protection of public health and safety. (See, 44 Fed. Reg. 70415; footnote.) We believe strongly that, pursuant to its obligation under the Atomic Energy Act to protect public health and safety, the NRC should require a specific, minimum number of sites that the Department must characterize. In particular, we urge the NRC to incorporate the recent Presidential directive, based on the recommendation of a majority of the Interagency Review Group on Nuclear Waste Management, to the Department to locate at least four sites in a variety of different geologic environments before selecting the first site for a repository.<sup>6/</sup> We interpret the phrase "a variety of geologic environments" in the Presidential "Fact Sheet" to mean that at least three different types of rocks have to be characterized.

The need for characterizing several sites in a variety of rock media is justified by more than the need to consider alternatives under the provisions of NEPA, although that is

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<sup>6/</sup>Office of the White House Press Secretary, "Fact Sheet, The President's Program on Radioactive Waste Management," p. 4 (dated February 12, 1980).

amply justified by recent technical analyses.<sup>8/</sup> We are surprised, therefore, that the proposed regulations do not, as they should, require DOE to conduct the necessary exploration and in situ testing at depth.

In conclusion, consistent with the recent decision of the President, we urge the Commission to revise its proposed rule so that the Department is required to characterize, through exploration and in situ testing at depth, a minimum of four qualified sites in three different rock media before an application to construct a repository is docketed.

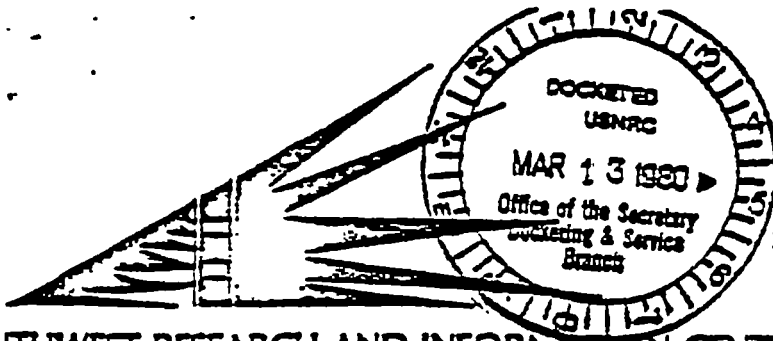
II. The Environmental Impacts of Site Characterization Have Not Been Adequately Addressed by the Commission in the Proposed Rule.

The Commission states in its rationale for a site characterization report that the environmental impacts of site characterizations are "relatively insignificant" and that the principal impact will be the "management of the spoils from

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<sup>8/</sup>See, for instance, Interagency Review Group on Nuclear Waste Management, Subgroup Report on Alternative Technology Strategies for the Isolation of Nuclear Waste, TID-28818 (Draft), Appendix A (October 1978); J. D. Bredenhoeft, et al., U.S. Geological Survey, Geologic Disposal of High-Level Radioactive Wastes -- Earth-Science Perspectives, Circular 779 (1978); U.S. Environmental Protection Agency, Report of an Ad-Hoc Panel of Earth Scientists, The State of Geological Knowledge Regarding Potential Transport of High-Level Radioactive Wastes from Deep Continental Repositories, EPA/520/4-78-004 (June 1978); and Committee on Radioactive Waste Management, National Academy of Sciences - National Research Council, Implementation of Long-Term Environmental Radiation Standards: The Issue of Verification, A Report Prepared by the Panel on the Implementation Requirements of Environmental Radiation Standards (1979).





DOCKET NUMBER  
PROPOSED RULE PR-2, et al  
44 FR 70408

(23)

SOUTHWEST RESEARCH AND INFORMATION CENTER

March 3, 1980

Secretary of the Nuclear Regulatory Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555  
ATTENTION: Docketing and Service Branch

RE: Disposal of High-Level Radioactive Wastes in Geologic Repositories;  
Proposed Licensing Procedures (44 Fed. Reg. 70408, December 6, 1979).

Herein are the further comments of Southwest Research & Information Center (SRIC) on the proposed rules on licensing of high level nuclear waste repositories. SRIC is a private, non-profit organization, providing educational and scientific information to the public at large and to community groups on various public interest issues. Over the past seven years we have been carefully studying the need for safe nuclear waste disposal. We have been particularly involved with researching issues related to the federal government's proposed WLF<sup>2</sup> Project.

We feel that adequate controls to protect public health and safety from the long-term effects of nuclear waste are essential. Our experience indicates that the Department of Energy (DOE) cannot and will not adequately protect public health and safety, nor will it encourage and support necessary public participation and a legitimate role for state and local government agencies in nuclear waste management programs. Therefore, we welcome these proposed NRC rules and find them superior in many ways to the original proposed General Statement of Policy, released in November 1978.

Nevertheless, we feel that various important inadequacies remain. These problems must be resolved before the NRC can play an essential role in nuclear waste management and begin to rebuild the public's confidence in the nation's overall nuclear waste management program. Our major concerns relate to site characterization, NEPA requirements, consultation and concurrence with states, and public participation.

Acknowledged by card 3-18-80

1) Not all necessary information has been included in the provisions related to site characterization.

We believe that NRC should re-think its entire concept of site selection and site characterization.

a) Criteria for selection of potential sites are very important. While we understand that the Commission's technical criteria are still under development, it is not at all clear that the site characterization report requires discussion of several crucial issues: mineral resource conflicts, geologic conditions below the repository level, and regional geologic conditions. For example, in the case of the proposed WIPP site, conflicts with large potash, oil and gas reserves, deep salt dissolution and regional geologic uncertainties have effectively disqualified the site. Thus, such a site should never qualify for site characterization, as the proposed rule defines it. It is not clear, however, that site characterization as defined in §60.2(n) would lead to a site characterization analysis with specific, major objections from the Director.

b) Before NRC can make determinations about site characterization, it must require in its rules that DOE provide detailed information about all sites examined--presumably at least 10-12 locations before 4 or more are selected for further work. Such numerical goals for sites considered should be specified in the rule as the minimum requirement. The site characterization report(s) from DOE must include a detailed review of all sites examined and evaluated. Only through such a complete review can NRC know how well the technical criteria are actually followed.

c) Site characterization should be defined to include preliminary borings and geophysical testing, rather than those features included in the proposed definition in §60.2(n), which are more correctly identified as "site development." We feel that this change in definition is justified for three reasons. (1) The scale of insitu testing apparently being contemplated could clearly disqualify a site if improperly done, as the proposed rule recognizes. Such insitu testing is a much different level of work than preliminary site characterization work that does not require NRC approval. Such insitu testing should be done only if there is a high probability that such work will be the first stage in actual mine construction--i.e., that the actual shafts for the repository would be the same (or just enlarged versions) of the development shaft(s). (2) "Site development" work will actually cost many times more than the \$20 million estimate mentioned (44 Fed. Reg. 70410). This assertion is based on the WIPP experience where almost \$100 million has already been spent and no shafts have been constructed, as well as on the basis of uranium

mining costs which indicate that one shaft alone would likely cost at least \$20 million.<sup>1</sup> (3) There is strong legal precedent for seeing actual mining and development work as part of the actual site construction, thereby requiring an EIS. Such construction should require concurrence from NRC and the host state before proceeding. The rule, therefore, should recognize that insitu work, under whatever name, is very important and should be undertaken only after alternatives have been considered and stringent technical criteria have been met.

2) The proposed rule does not adequately reflect the requirements of NEPA

Both site characterization and licensing of nuclear waste depositories are significant federal actions under NEPA. Therefore, the EIS process must be followed at both stages. An Environmental Impact Statement should be submitted with the Site Characterization Report. Such an EIS is necessary to establish the environmental impacts of actual site characterization as well as provide the public with adequate data in order to evaluate the Site Characterization Report. Thus, §60.11(f) should be re-written to require that an EIS be submitted, and not just leave it to the discretion of the Department. Potential environmental impacts associated with site selection and site characterization must be carefully evaluated before the NRC can approve any site characterization report.

3) The essential role of state consultation and concurrence must be required in the proposed rule.

The historic role of the AEC/ERDA/DOE have left state and local governments and the public legitimately skeptical about the federal government's nuclear waste disposal policy and its implementation. Thus, states have in the past sometimes tried to prevent the federal government from even looking for possible waste repositories in their state. Such a situation is unacceptable, but this reality can be overcome only by ensuring a reasonable role for states and the public in all aspects of the federal waste management program. Specifically, a recognized consultation and concurrence role for states is essential.

Therefore §60.11(b) should require consultation and concurrence of the state at all parts of the site selection and characterization process, as well as in the actual repository construction and operation. Furthermore, §60.61 must require that NRC staff be readily available to the states to provide technical assistance and information to any state that requests it. Such a process can facilitate an adequate scientific analysis by the states and encourage their strong participation in--and thereby their likely acceptance of--waste repository siting in their state.

<sup>1</sup>See for example, Barry L. Perkins, An Overview of the New Mexico Uranium Industry, Santa Fe, N.M., Energy & Minerals Department, 1979, p.85.

- 4) Public participation must not be left just to the states, but rather must be required of the Department and the states, as well as by NRC.

Similarly to the states, the public is highly skeptical of past federal government efforts at nuclear waste disposal. Thus, most public opinion surveys show strong opposition to nuclear waste disposal sites, even among those people who favor nuclear power. To begin to acknowledge and respond to this public concern, stringent standards for public participation must be met by all agencies involved in the nuclear waste management program.

§60.62(c)(4) seems to imply that public participation be left exclusively to the states. NRC's rule should indicate that both the DOE and the states are expected to solicit and respond to citizen input. Specifically, §60.11(a)(6) should indicate that not only the means used to obtain public input but also the substance of such input and the Department's response to such comments be reported.

Furthermore, NRC should have public participation in its proceedings, including funding for such participation. At a minimum, a reimbursement method of citizen funding, similar to that used in the Public Utility Regulatory Policy Act (PURPA) should be included so that those citizen groups who are substantially involved in licensing proceedings can be reimbursed. Such involvement is necessary for a sound, scientific program which can merit public confidence.

Public participation should include opportunity for all intervenors to present testimony and cross-examine witnesses in any formal proceedings. Through such a process it will be clear whether information from all sides is accurate and can withstand scrutiny.

Finally, information must be readily available to the public, and not only through the NRC Public Document Room. Various public document rooms should be established throughout a potential host state. Public, university and state libraries can well fill this role. Additionally, important documents should be made available directly to citizen organizations who have demonstrated an interest in nuclear waste disposal issues. Such groups should be put on a mailing list and receive documents as they become available.

Thank you for your careful consideration of these comments.

*Don Hancock*

Don Hancock,

Deputy Executive Director

*Alice G. Hector*

Alice G. Hector,

Attorney-at-Law.

DE/mb

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Bureau of Geology  
P. O. Box 5348  
Jackson, Mississippi 39218  
(601) 354-6228



March 3, 1980

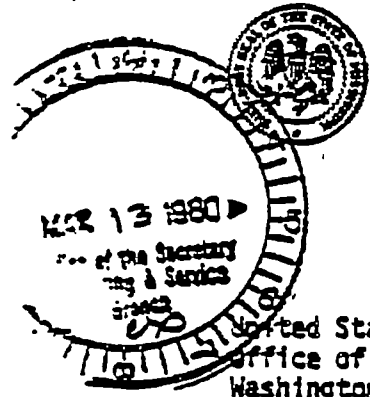
PROPOSED RULE

PROPOSED RULE

PR-2, et al

24

44 FR 70408



United States Nuclear Regulatory Commission  
Office of the Secretary  
Washington, D. C. 20555

Attn: Docketing and Service Branch

Re: Comments on Proposed Rules for NRC Licensing Procedures  
for Nuclear Waste Repositories

Mr. Secretary:

These proposed rules are intended to present requirements applicable to the Department of Energy in submitting an application for a license for a nuclear waste repository. The proposed rules also set forth provisions for consultation and participation in the license review by State Government. With reference to the State participation, it is stated, "the Commission has undertaken a thorough review of the matter and now proposes a more extensive informal involvement during early phases of site characterization and a deferral of formal proceedings until site characterization has been completed." The term informal involvement appears to be somewhat out-of-step with previously stated ideas that target States would be actively involved by being assured of having the opportunity to engage in the decision making process. This idea is even stated in these proposed rules under the Site Characterization Review section. We object to the term informal involvement, especially, if the Federal government (including The President) is sincere in its many statements relative to the States' role of "consulting partners" to the Federal government in matters concerning nuclear waste repositories.

We fully agree with the concept of the Nuclear Regulatory Commission, as well as the States, having the opportunity to consult in and review the site characterization studies to help insure adequate data and safeguards are obtained before a site is finally selected.

It is stated in the Scope of Proposed Rule section, "The technical criteria against which the license application will be reviewed are still under development." Are the States going to be consulted during the development of these criteria, as we have been led to believe? If so, why isn't it indicated in the rules? If not, why not?

It is stated once the wastes have been emplaced the Department of Energy may submit an application to decommission the site. There is no mention of a long-term monitoring system. Will the site be monitored and will the States be involved in the design of same? Will appropriate State agencies be involved in any way in the monitoring process?

~~Administrative~~ by card 3-14-80

United States Nuclear Regulatory Commission  
March 3, 1980  
Page 2

Under Subpart D, Section 60.71 - Records and Reports - Why not also notify the affected State of any deficiency found in the site?

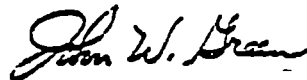
Section 60.73 - Inspections - Section states the Department of Energy shall allow the Nuclear Regulatory Commission to inspect on the premises of the repository. Why not allow appropriate State representatives to accompany on such inspections?

Obviously, we have the idea States are being excluded as much as possible in these matters which are of great concern to them. We sincerely hope the States can be involved in these matters which could have an economic, social and safety effect on them for centuries to come.

We appreciate the opportunity of reviewing these Proposed Rules.

Sincerely

BUREAU OF GEOLOGY



John W. Green  
Environmental Geologist

JWG:js

cc: Hon. William A. Allain  
State Attorney General

Alvin R. Bicker, Jr.  
Acting Director  
Bureau of Geology



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Office of Energy  
P. O. Box 10588  
Jackson, Mississippi 39209  
(601) 961-5060



March 3, 1980

Secretary  
Nuclear Regulatory Commission  
Washington, D. C. 20555

Attn: Docketing and Services Branch

Dear Sirs:

RE: COMMENTS ON PROPOSED RULE FOR DISPOSAL OF  
HIGH-LEVEL RADIOACTIVE WASTE (HLW) IN GEOLOGIC  
REPOSITORIES; PROPOSED LICENSING PROCEDURES

The present approach to the HLW Disposal process evidenced by the proposed licensing procedures outlined in FR.Vol 44, No. 236 is an action in the proper direction. The Mississippi Office of Energy supports the concept of the NRC's involvement in expanded site characterizations rather than provisional construction authorizations and in the review of the Department of Energy's plans for site characterization and site selection procedures, methods and criteria prior to the use of such procedures, methods, and criteria.

There are, however, several comments and questions that deserve additional attention:

- 1) It is most important at the state and local level that agency representatives and citizens in general have a clear understanding of the roles to be played by DOE, NRC, EPA, and other federal agencies that might be involved. The process now defined tends to cloud and distort the view as to these roles.

Some overview of these relationships should be made an ongoing part of any state and local public hearing and/or meetings.

- 2) There are presently several site characterization decisions in progress by DOE, including three sites in Mississippi. The site characterization reports under the pre-application review should apply in retrospect to these efforts.
- 3) The site characterization report does not address directly the problems of site-related impacts, such as transportation, economic and social, on the local and state infrastructure and population. This should be specifically addressed in any site characterization report.

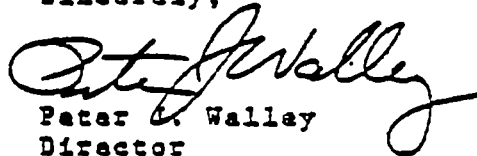
Secretary, Nuclear Regulatory  
Commission  
Page 2  
March 3, 1980

- 4) The contents of license applications require plans for coping with radiological emergencies. These types of plans place a considerable amount of responsibility for planning on the state and local governments. The extent and scope of the plans should be defined as in those regulations required for nuclear commercial power reactors.
- 5) In the license amendment to decommission the description of the program for post-decommissioning monitoring should be more specific and require some minimum level of activity in perpetuity.
- 6) The general tone of the Subpart C--Participation by State Governments--gives the impression that state and local governments are that of observers and occasional participants provided they generate enough activity.

The consultation process should give the state a stronger, more formalized role in the activities of site characterization, particularly those that relate to site specific data as opposed to generic data. The concurrence part of the consultation and concurrence process would then be addressed by any state and/or federal laws in place. The consultation definition and process should be made clearer to the extent that the state has the procedure available to recommend specific courses of action whereupon the Director of the NRC's Office of Nuclear Materials Safety and Safeguards would respond in writing as to why a particular recommendation was not taken, if so. This would define the state participation program in a formal sense. This, of course, would then modify the approval of proposals process (Section 60.83).

Please be assured that Mississippi is vitally concerned with this process and will provide additional comments and concerns as the issue matures.

Sincerely,

  
Peter A. Walley  
Director

PJW/js

cc: Governor William Winter  
Attorney General William A. Allain  
Mississippi Congressional Delegation



Atomic Industrial Forum, Inc.  
7101 Wisconsin Avenue  
Washington, D.C. 20014  
Telephone: (301) 684-9280  
TWX 7108249802 ATOMIC FOR DC

Erwin A. Wiggin  
Executive Vice President

PROPOSED RULE PR-2, et al (25)  
94 FR 70408

March 6, 1980

Secretary of the Commission  
Nuclear Regulatory Commission  
Washington, D.C. 20555

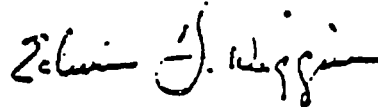
Attention: Docketing and Service Branch

Subject: Comments on "Disposal of High-Level Waste  
in Geologic Repositories; Proposed Licensing  
Procedures." 10 CFR Parts 2, 19, 21, 30,  
40, 51, 60 and 70. FR Vol. 44 70408-70421,  
December 6, 1979.

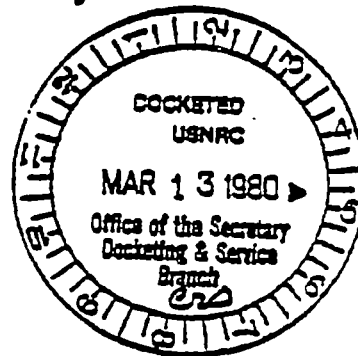
Dear Sir:

The Subcommittee on Radioactive Waste of the Atomic  
Industrial Forum's Committee on Nuclear Fuel Cycle  
Services is pleased to submit comments on the above  
referenced subject.

Sincerely,



EAW:jmc  
Enclosure



Acknowledged by card: 3-14-80

Comments of the AIF Subcommittee  
on Radioactive Waste on  
"Disposal of High-Level Wastes in Geologic  
Repositories; Proposed Licensing Procedures"

10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60 and 70  
Federal Register, Vol. 44 70408-70421, December 6, 1979

The AIF Subcommittee on Radioactive Waste is pleased to comment on the proposed rule for licensing the receipt and disposal of high-level radioactive wastes (HLW) at geologic repositories (10 CFR 60), which was published in the Federal Register by the Nuclear Regulatory Commission on December 6, 1979. We recognize that the proposed rule contains only the procedural requirements for licensing and does not address the technical requirements, and we are restricting our comments at this time to the proposed procedural requirements. However, it may not be possible to totally separate subsequent comments on the technical issues from these comments and observations on the procedural requirements. Thus, when we subsequently review the proposed technical requirements, we may offer additional comments on the procedural requirements.

The Subcommittee believes that a very high priority should be given to a well defined government program of action to resolve the nuclear waste issue; and that an important part of this program is the development of an operational geologic repository for High Level Waste without undue delay because of procedural or institutional issues. We believe that the definitions of appropriate licensing procedures and technical criteria for such repositories is a beneficial step; and we have reviewed the proposed rule with this objective in mind.

General Comment

Our major concern with the proposed rule is the implication that NRC must await DOE's completion of extensive site characterization programs for several sites in several media before it can establish licensing criteria. We are aware of the obligation imposed on DOE by the President's policy statement of February 12 to "focus on research and development, and on locating and characterizing a number of potential repository sites in a variety of different geologic environments with diverse rock types." That policy statement further states: "When four to five sites have been evaluated and found potentially suitable, one or more will be selected for further development as a licensed full-scale repository."

The rationale for this deliberate approach is to satisfy the public acceptance and political issues that over the years have come to be

associated with resolution of the waste management problem. We endorse the President's program and believe it has the potential for resolving public acceptance and political issues. On the other hand, NRC's responsibility in determining licenseability should be based solely on whether a particular site meets certain predetermined technical criteria. It should not be necessary for NRC to evaluate the characterization of multiple sites in multiple media to develop performance criteria. Further, such criteria should be available at an earlier date than is indicated in the President's policy statement in case the Congress, which it has within its powers to do, determines that the program should be accelerated.

### Specific Comments

A. Our general comment applies specifically to the tone of the Supplementary Information as follows:

1. Page 70409 Vol. 44 No. 236

"...We anticipate that it will be necessary for the Department to explore at depth more than one site at different locations and in different geologic media...."

2. Page 70410 Vol. 44 No. 236

"...procedure here is consistent with the recommendation of the Interagency Review Group on Nuclear Waste Management which calls for simultaneous investigation of several potential sites...."

3. Page 70410 Vol. 44 No. 236

"...in light of the requirement discussed above that multiple sites must be characterized...."

It appears that the writer has used the careful selection of random points to develop the basis for an NRC requirement.

We would like to note that the IRG report also states, page 62 of TID-29442, "...a number of potential sites in a variety of geologic environments should be identified and early action should be taken to reserve the option to use them if needed at any appropriate time. In order to avoid working toward and ultimately having a single national repository, near-term options should create the option to have at least two (and possibly three) repositories become operational during this century, ideally, in different regions of the country."

We agree with the objective of the above paragraph, but do not believe that this objective requires any delay in proceeding with the development of NRC criteria.

- B. Our general comment also applies to the proposed modification to 10 CFR, Paragraph 51.40(d). We see no technical or environmental basis for the requirement that an environmental report must include "site characterization data for a number of sites in appropriate geologic media." A recommended approach would be for DOE to show that at the particular site for which construction authorization is sought, the geologic conditions fall within NRC technical requirements. The DOE submission could be supplemented by the results of preliminary borings and geophysical testing for alternate candidate sites.

C. Paragraph 60.2 Definitions

1. We believe the list of definitions may have to be significantly expanded once the technical requirements section of 10 CFR 60 are defined. Thus, we may have later comments on this section.
2. The term "decommissioning" has a significantly different meaning in this part than in other parts of 10 CFR. We suggest a different term be used, such as "Permanent Closure."
3. We suggest that the words "storage space" in Item (2) be changed to "repository." The word storage implies temporary rather than permanent.
4. With respect to Item (i), we would note that all irradiated reactor fuel is not High Level Waste. It may be a valuable resource. Therefore, for purposes of this definition, we recommend that the words "spent reactor fuel intended for disposal" be substituted for "irradiated reactor fuel."



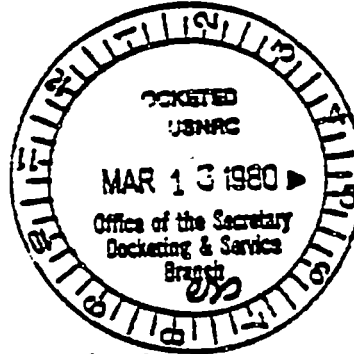
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
WASHINGTON, D.C. 20460

MAR 7 1980

DOCKET NUMBER  
PROPOSED RULE PR-2, et al (26)

OFFICE OF THE  
ADMINISTRATOR

Mr. Samuel J. Chilk  
Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Attn: Docketing and Service Branch  
1717 H Street, N.W.  
Washington, D.C. 20555



Dear Mr. Chilk:

The U.S. Environmental Protection Agency (EPA) has reviewed the proposed rule 10 CFR Parts 2, 19, 20, 21, 30, 40, 51, 60, and 70, "Disposal of High-Level Radioactive Wastes in Geologic Repositories; Proposed Licensing Procedure," which appears in Vol. 44, Federal Register, pages 70408-70421. While the proposed rule appears to offer a logical, systematic approach to licensing a high level radioactive waste (HLW) repository, we have a concern with respect to site acceptability criteria. We urge that the criteria be defined so as to avoid ambiguity and to assure proper attention and informed decisions at each critical step of the exploration and investigation.

The site acceptability criteria are fundamental to these proposed procedural rules for approval of a repository site. At each step of exploration and investigation of a candidate site, established criteria will be needed for determinations as to whether that site is suitable as a repository. This is important since it is reasonable to predict that several difficult decisions will be required during the exploration of a candidate site. Decisions to abandon "consideration of a candidate site" will be particularly difficult after considerable resources have been expended for the exploration of that site. We believe the NRC should carefully examine the proposed rules in this light.

Our review of the proposed rules focused on the application of the site acceptability criteria as discussed in the previous paragraph. We found that the requirements for the applicant's design criteria were somewhat confusing. In the Preapplication Review Section, Part 60.11(a), the requirements include the criteria used by the U.S. Department of Energy (DOE) to arrive at the candidate areas and the sites(s) selected. However, in the License Applications Section, Part 60.21(c)2, and the Construction Authorization, Part 60.31(a), the requirements specify both DOE and NRC criteria, including subparts E and F, which we assume will become the Sections containing the NRC technical criteria. This raises such questions as: (1) What is being done to assure compatibility of the criteria? and (2) When will the various criteria be available? We believe that you should resolve such questions before embarking on major site exploration activities.

Acknowledged by card: 3-14-80

EPA is also concerned about apparent inconsistencies in the terminology for the materials to be included in a license. Various terms used include: high-level radioactive waste; waste radioactive material; source, special nuclear, or byproduct material; radioactive material; and wastes. This is noted in proposed Part 2.101(f)(1), Part 2.103(a), Part 2.104(e), Part 60.3(a), Part 60.21(C)(5), Part 60.31(a)(1), and Part 60.41. Either the terminology should be made consistent or the differences should be explained in the text.

The proposed rule appears to provide adequate opportunity for review by the public and by local, State, and Federal agencies. In addition, we note that the President intends to establish a State Planning Council which will strengthen intergovernmental relationships and help fulfill the joint responsibilities for the protection of public health and safety in radioactive waste matters.

EPA is currently developing the environmental standards for the disposal of high-level radioactive waste. On February 12, 1980, in his Statement on Radioactive Waste Management, the President directed EPA and NRC to complete a Memorandum of Understanding to address the issues of coordinating methodologies and procedures in the management of waste. Therefore, we suggest that the Commission, in its licensing procedures under 10 CFR 60, require that these EPA standards be met by its licensees.

We appreciate the opportunity to comment on this proposed rule and look forward to a unified, coordinated effort on this urgent national problem. Should you have questions concerning EPA's comments, please contact Ms. Betty Jankus of my staff (202-755-0770).

Sincerely yours,



William N. Hedeman, Jr.

Director

Office of Environmental Review (A-104)

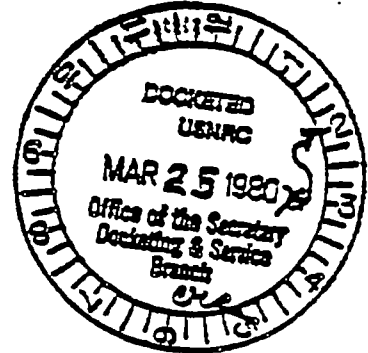


Department of Energy  
Washington, D.C. 20585

SECRET NUMBER  
PROCESSED FILE PR-2, et al  
(44 FR 70408)

(27)

MAR 24 1980



MEMORANDUM FOR Honorable Samuel J. Chitt  
Secretary of Nuclear Regulatory Commission  
Washington, D.C. 20555

SUBJECT: Proposed NRC Rules - 10 CFR Parts, 2, 19, 20, 21, 30,  
40, 51, 60, and 70 for the Disposal of High-Level  
Radioactive Wastes in Geological Repositories; Proposed  
Licensing Procedures

The Department of Energy (DOE) believes the proposed rules to be inadequate with regard to the participation of Indian Tribal governments. A failure to involve Tribes in the initial process will result in later practical and political difficulties which would be unnecessary. Further, to include Indian Tribal governments would be consistent with their unique governmental relationship with the U.S. Finally, to ignore Tribes would cause gaps in the effective implementation of HLW disposal because States have no jurisdiction over Tribes, absent express Federal legislation to the contrary.

Therefore, the DOE recommends the following language changes:

FR, Vol. 44, No. 236, Thursday, December 6, 1979

FR page 70413, Part 2

10 CFR 2.101

§ (f) (4) (ii) following "the county" insert "or Indian Tribe,"

(iii) following "State," insert "Indian Tribe,"

(5) following "State," insert "Indian Tribe,"

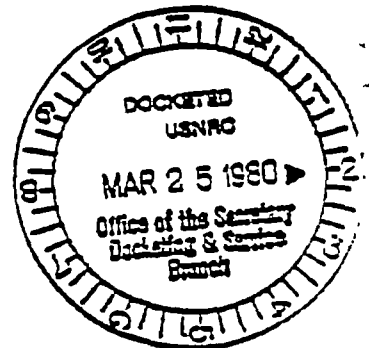
10 CFR 2.103 (a) following "State" insert, "Indian Tribe"

10 CFR 2.104 (e) following "county" insert "or Indian Tribe"

FR page 70416, Part 60

§ 60.2 (1) insert in lieu of the present (1) the following definition  
"Indian Tribe" means any Indian Tribe, band, nation, or other organized group or community, including any Alaska Native village or regional or village corporation as defined in or established pursuant to the Alaska Native Claims Settlement Act which is recognized as eligible for the special programs and services provided by the United States to Indians because of their status as Indians."

Remember the present (1) through (c) as (m) through (p)



Subpart B

§ 60.11 (a)

New (6) "a description of conformity with P.L. 95-341" renumber old (6) and (7) as new (7) and (8). Old (6) (new (7)) following "public" insert ", Indian Tribal"

(b) following "State" insert ", Indian Tribes"

(c) insert at the end of the sentence, after "contiguous States" the following "and to the chief executive of any affected Indian Tribe"

(h) following "State" to insert "and Indian Tribes"

FR page 70417

§ 60.21 (b)

new (4) "A certification that the Department has exclusive jurisdiction over the lands designated in the application and that the Department holds such land in fee simple without encumbrances"

FR page 70420 and 70421

Subpart C

§ 60.61 (a) after "request of a State" insert "or an affected Indian Tribe," and after "representatives of State" insert ", Indian Tribes"

(c) after "States" insert "and Indian Tribes,"

§ 60.62 (a) after "scope of State" insert "or Indian tribal" ;and after "with the State" insert "or Indian Tribe"; and after "by the State" insert "or Indian Tribe."

(b) after "States" insert "and Indian Tribes"; and after "proposal for State" insert "or Indian Tribal"; and after "A State's" insert "or an Indian Tribe's."

(c) After "State" insert "or the chief executive of the Indian Tribe"

(1) After "State" insert "or Indian Tribe"

(2) After "State" insert "or Indian Tribe"

(3) After "State" insert "or Indian Tribe"

(5) After "State" insert "or Indian Tribe"

(d) After "If the State" insert "or Indian Tribe"

and after "exchange of State" insert "or Indian Tribal"

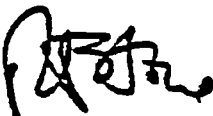
§60.83 (a) After "representatives of the State" insert "or Indian Tribes" and after "by the State" insert "or Indian Tribe."

(b) (1) After "State" insert "or Indian Tribe"

(2) (i) After "State" insert "or Indian Tribe"

(c) After "State" insert "or to the chief executive of the originating Indian Tribe."

I appreciate your consideration of these comments. Thank you for your time.

  
Richard J. Stone  
Director  
Intergovernmental Affairs



**TASC**  
THE ANALYTIC SCIENCES CORPORATION

Six Jacob Way, Reading, MA 01867. (617) 944-6850

DOCKET NUMBER  
PROPOSED RULE PR-2, et al  
(44 FR 70408) 28

March 5, 1980

Secretary of the Commission  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

Attention: Docketing and Service Branch

Regarding: Disposal of High-Level Radioactive Wastes  
in Geologic Repositories; Proposed Licens-  
ing Procedures 10 CFR Parts 2, 19, 20, 21,  
30, 40, 51, 60 and 70 44 F.R. 70408  
(December 6, 1979)



Dear Sir:

In response to the Commission's request for comments on its proposed procedural rule for licensing of disposal of high-level radioactive wastes in geologic repositories, I am pleased to submit the following comments on behalf of The Analytic Sciences Corporation (TASC).

We would like first to note that we have had an opportunity to review the comments submitted by Maurice Axelrad, Esq., of Lowenstein, Newman, Reis, Axelrad, and Toll, on behalf of the Utility Waste Management Group (UWMG) and the Edison Electric Institute (EEI). We would like to be recorded as endorsing the UWMG/EEI comments. Our own comments in some cases address the issues discussed by UWMG/EEI; we hope you will find our suggestions and theirs to be complementary and useful.

MULTIPLE SITES AND MEDIA

We fully concur with the idea of pursuing alternatives in parallel. Indeed, the need to do so was reported five years ago\*. We do not, however, believe it is appropriate to specify in advance the number of sites and media to be explored. While the proposed rule does not explicitly make such specifications, supporting information (44 F.R. 70409, and various media reports) indicates at least a trend toward explicit, although "unofficial", requirements.

\*"Ultimate Disposal - A Plan for Achievement", by J.W. Bartlett, in Waste Management '75, Proceedings of the Symposium on Waste Management at Tucson, Arizona, March 24-26, 1975.

Acknowledged by card...3-19-80.....

The scope of the site identification process can and should be established by the process itself. Suitability of a candidate site will, as noted in the discussion of the proposed procedures, be determined by social, environmental, and technical factors. In practice, social and environmental factors are more likely than technical factors to disqualify a candidate site, i.e., large areas of potentially suitable geology exist.

The key site selection technical issues are concerned with measurements and data analysis to assess how the geology will perform as an integral part of the repository system within the constraints imposed by performance criteria. We submit that the most efficient and appropriate way to proceed is to build an inventory, of unspecified number, of candidate-site-containing geologies, each with perhaps an area on the order of 100 square miles, each of which has passed a coarse social and environmental screening, and each of which is preliminarily assessed to be able to perform adequately.

This approach can in fact be expected to produce a multiplicity of acceptable sites, albeit with differing system design details. Refined evaluation leading to the Site Characterization Report may then show that it is appropriate to focus attention and resources on one or two sites at most.

It is obvious that this approach can be used effectively only if the technical criteria for assessing repository system performance are in place. We therefore urge early promulgation of such criteria. We also note a need for such criteria to be internally consistent and flexible enough to accommodate a variety of repository system concepts. We would also like to observe that the technical criteria and the procedures addressed in these proposed rules are closely linked. In an ideal world, the procedures would be deduced from the technical criteria.

#### SITE CHARACTERIZATION REPORT

We endorse the concepts and intent associated with the Site Characterization Report. We suggest, however, in view of its proposed function and content, that it would more appropriately be termed a "Site Identification Report". Our comments below concern the production and content of that report.

#### CONSISTENCY OF INFORMATION AND DECISION MAKING

Our greatest concern with the proposed rules is the potential for lack of consistency between information presented and decisions made in the early stages (i.e., site selection) of the proposed licensing process. The key issue can be expressed as follows: in the site selection stages of the licensing process,

March 5, 1980

will the scope and detail of data, and the amount and type of data analysis presented, be consistent with what the NRC really requires to make their decisions? Put another way, do the proposed rules, especially with respect to the content and use of the Site Characterization (Identification) Report, adequately reflect the NRC's intent and expectations?

The issue addressed is shown diagrammatically in the attached figure, which indicates that the NRC might pursue three alternative strategies in its process of certifying the safety of a proposed repository at the early stages of review: a high, intermediate, or low degree of confidence that the repository will indeed prove to be acceptable (curves 1, 2, and 3, respectively). The thrust of the discussion of Site Characterization Review (44 F.R. 70409) is clearly to favor a conservative approach, i.e., to have an early-on high degree of confidence such as is illustrated by curve 1.

We endorse this conservative approach. We do not, however, find clear evidence that the relationships among this approach, expenditures, data acquisition, data analysis, and review criteria are understood. In our estimation, the investments of funds and effort needed to prepare the Site Characterization (Identification) Report are very large. In this context, the incremental site characterization costs may indeed be small (44 F.R. 70410), but so are the incremental gains in knowledge. What, then, are the objectives and benefits for characterization excavations and in-situ testing? More is said later about this issue.

The definition of site characterization (item n, 44 F.R. 70416) specifically excludes data acquisition and analysis activities that precede site characterization. Indeed, the proposed rules and accompanying discussion are virtually silent on data acquisition and analysis during the reconnaissance phase. Consistency in the conservative approach inherently requires, however, that a high degree of confidence in the suitability of proposed sites be attained as a result of this effort. We submit, therefore, that the rules should give much more attention to this phase of the effort. Doing so may force revisions to succeeding procedures or validate the proposed procedures.

As noted in the rulemaking discussion (44 F.R. 70410), there is no point in proceeding (with site characterization) if reconnaissance reveals insuperable defects. We can expect that reconnaissance will indeed reject sites with detected insuperable defects. We can also expect, however, that there will be many places where defects are either not detected by reconnaissance procedures or deemed not to be insuperable.

**TASC**

March 5, 1980

- We interpret the phrase "...serious but not readily observed..." to be concerned with determinations not made under previous scope and/or methods of measurement. In practice, we would expect the scope and methods of prior measurement to have been highly comprehensive in order to arrive at the conclusion that the proposed site is a good one. The necessary exploration techniques do exist\*; they need only to be used. The results of their use would then dictate what procedures and methods to use at depth. These at-depth efforts could have limited impact on confidence in measured results.

\*Philip R. Romig, "Applications of Geophysical Methods in Nuclear Waste Disposal Siting", draft report of the results of Keystone conferences.

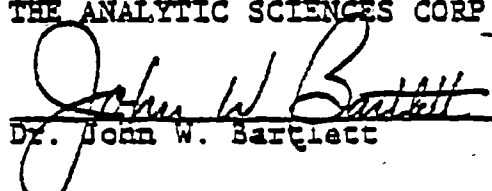
We would like to emphasize that we are not arguing against the concept of exploration and testing at depth. We do argue, however, that what is done and how it is done should be determined on a case-by-case basis. Indeed, the basic strategy of considering alternative sites and media demands a high degree of flexibility on this issue.

#### SUMMARY

In summary, we believe NRC requirements concerning site selection should be broad and flexible. If the DOE is to fulfill its responsibilities effectively and expeditiously, procedural specifications on this matter will have to be minimal. The NRC efforts should focus on development of sound, consistent technical criteria and review procedures.

Very truly yours,

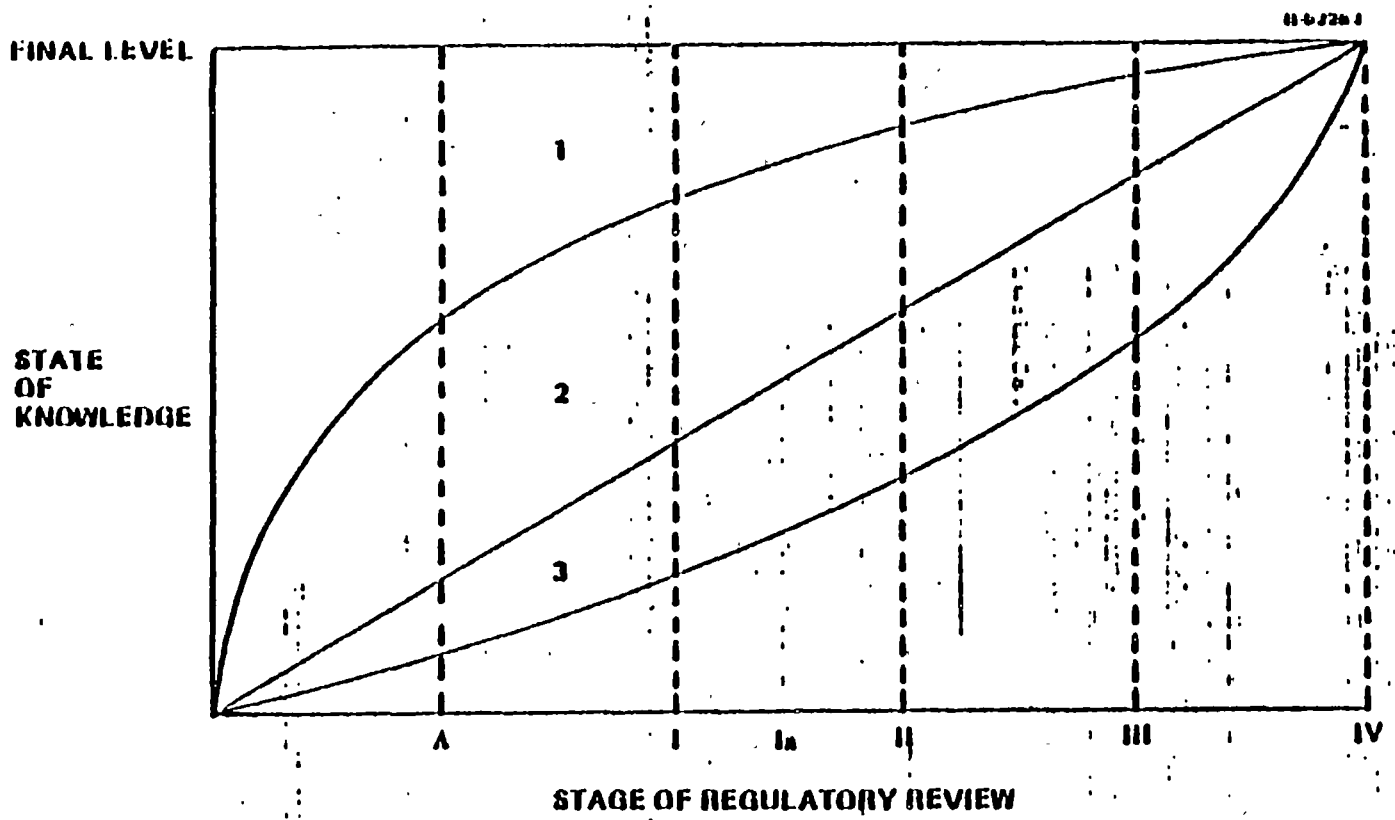
THE ANALYTIC SCIENCES CORP.

  
Dr. John W. Bartlett

JWB/mf

Enclosure

**TASC**



- |                                       |                                 |
|---------------------------------------|---------------------------------|
| A. REGIONAL STUDIES (NO REVIEW)       | II. CONSTRUCTION APPLICATION    |
| I. SITE CHARACTERIZATION REPORT       | III. EMPLACEMENT APPLICATION    |
| II. CHARACTERIZATION PROGRESS REVIEWS | IV. DECOMMISSIONING APPLICATION |

REGULATORY GUIDANCE, INFORMATION DEVELOPED, AND ANALYSES PERFORMED AT EACH STAGE MUST BE CONSISTENT WITH THE KNOWLEDGE GROWTH PROFILE THAT IS SOUGHT

G.V. "BJNNY" MONTGOMERY  
3RD DISTRICT, MISSISSIPPI

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COMMITTEE ON  
ARMED SERVICES  
VETERANS' AFFAIRS

ADMINISTRATIVE ASSISTANT  
JACK VANCE

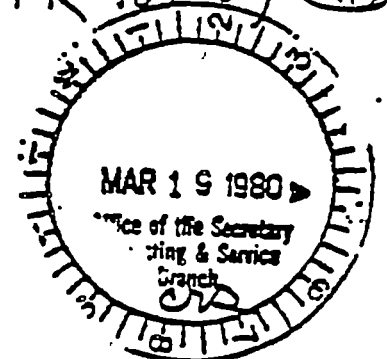
# Congress of the United States

## House of Representatives

Washington, D.C. 20515

March 14, 1980

DOCKET NUMBER  
PROPOSED RULE PR-2, et al  
(44 FR 70408) (29)



Honorable Joseph M. Hendrie  
Chairman  
Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Chairman:

I would like to invite your attention to the attached copy of a letter addressed to the Commission by Mr. Peter J. Walley, Director, Mississippi Department of Natural Resources, Jackson, Mississippi, which is self-explanatory.

Since I am vitally interested in this matter involving the State of Mississippi, I would appreciate very much being furnished a copy of your response to Mr. Walley.

Thank you for your attention to this request.

With kindest regards,

Sincerely,

*G. V. Montgomery*  
GILLESPIE V. MONTGOMERY  
Member of Congress

GVM:im  
Enclosure

Acknowledged by card. *dlh*.....



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Office of Energy  
P. O. Box 10586  
Jackson, Mississippi 39209  
(601) 961-5060



March 3, 1980

MAR 08 1980

Secretary  
Nuclear Regulatory Commission  
Washington, D. C. 20555

Attn: Docketing and Services Branch

Dear Sirs:

RE: COMMENTS ON PROPOSED RULE FOR DISPOSAL OF  
HIGH-LEVEL RADIOACTIVE WASTE (HLW) IN GEOLOGIC  
REPOSITORIES; PROPOSED LICENSING PROCEDURES

The present approach to the HLW Disposal process evidenced by the proposed licensing procedures outlined in FR.Vol 44, No. 236 is an action in the proper direction. The Mississippi Office of Energy supports the concept of the NRC's involvement in expanded site characterizations rather than provisional construction authorizations and in the review of the Department of Energy's plans for site characterization and site selection procedures, methods and criteria prior to the use of such procedures, methods, and criteria.

There are, however, several comments and questions that deserve additional attention:

- 1) It is most important at the state and local level that agency representatives and citizens in general have a clear understanding of the roles to be played by DOE, NRC, EPA, and other federal agencies that might be involved. The process now defined tends to cloud and distort the view as to these roles.

Some overview of these relationships should be made an ongoing part of any state and local public hearing and/or meetings.

- 2) There are presently several site characterization decisions in progress by DOE, including three sites in Mississippi. The site characterization reports under the pre-application review should apply in retrospect to these efforts.
- 3) The site characterization report does not address directly the problems of site-related impacts, such as transportation, economic and social, on the local and state infrastructure and population. This should be specifically addressed in any site characterization report.

Secretary, Nuclear Regulatory  
Commission

Page 2

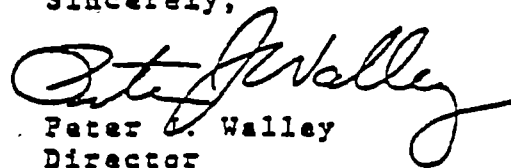
March 3, 1980

- 4) The contents of license applications require plans for coping with radiological emergencies. These types of plans place a considerable amount of responsibility for planning on the state and local governments. The extent and scope of the plans should be defined as in those regulations required for nuclear commercial power reactors
- 5) In the license amendment to decommission the description of the program for post-decommissioning monitoring should be more specific and require some minimum level of activity in perpetuity.
- 6) The general tone of the Subpart C--Participation by State Governments--gives the impression that state and local governments are that of observers and occasional participants provided they generate enough activity.

The consultation process should give the state a stronger, more formalized role in the activities of site characterization, particularly those that relate to site specific data as opposed to generic data. The concurrence part of the consultation and concurrence process would then be addressed by any state and/or federal laws in place. The consultation definition and process should be made clearer to the extent that the state has the procedure available to recommend specific courses of action whereupon the Director of the NRC's Office of Nuclear Materials Safety and Safeguards would respond in writing as to why a particular recommendation was not taken, if so. This would define the state participation program in a formal sense. This, of course, would then modify the approval of proposals process (Section 60.83).

Please be assured that Mississippi is vitally concerned with this process and will provide additional comments and concerns as the issue matures.

Sincerely,

  
Peter G. Walley  
Director

PJW/js

cc: Governor William Winter  
Attorney General William A. Allain  
Mississippi Congressional Delegation



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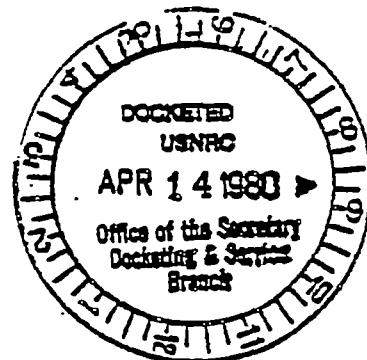
COMMITTEE  
ARMED SERVICES  
VETERANS AFFAIRS  
ADMINISTRATIVE ASSISTANT  
JACK VANCE

Congress of the United States  
House of Representatives  
Washington, D.C. 20515

OFFICE  
MEMPHIS, MISSISSIPPI 37301  
AREA CODE (901) 423-4421

April 8, 1980

DOCKET NUMBER  
RECORDED RULE PR-2, 19, 20, 21, 30, 40, 51, 60, 70 (30)  
(44 FR 70408)



Honorable John F. Ahearna  
Chairman  
Nuclear Regulatory Commission  
Washington, D. C. 20555

Dear Mr. Chairman:

Recently, the Director of the Mississippi Department of Natural Resources submitted comments to you concerning the proposed rule for disposal of high-level radioactive waste (HLW) in geologic repositories; proposed licensing procedures.

This subject is one of considerable interest and concern to me and the purpose of this letter is to give my full support to the comments offered by Director Peter J. Walley. I feel that the comments and suggestions offered are valid issues and concerns and I urge you to give them full consideration in your evaluation for issuance of the final rule.

I think it is essential that the states be made full partners in the activities of site characterization.

Also, of the deepest concern to me is the fact that too many Federal agencies are involved in this process. I think it is absolutely essential that clearly defined roles and responsibilities must be established for each of the participating Federal agencies and one agency must have the lead role in dealing with the states on these issues.

Your full consideration of the issues raised by the Mississippi Department of Natural Resources will be appreciated. A copy of the letter submitted by the Department is attached for your convenience.

With kindest regards,

Sincerely,

  
GILLESPIE V. MONTGOMERY  
Member of Congress

GVM:jvm

4/10...To OCA for Direct Reply...Suspense: April 21...Cpys to: Chm  
EDO, RF, Docket...80-0703



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES

Office of Energy  
P. O. Box 10588  
Jackson, Mississippi 39209  
(601) 951-5060

15

March 3, 1980



DOCKET NUMBER

PROPOSED RULE

15-2 et al  
(44FR 70498)

Secretary  
Nuclear Regulatory Commission  
Washington, D. C. 20533

Attn: Packaging and Services Branch

Dear Sirs:

RE: COMMENTS ON PROPOSED RULE FOR DISPOSAL OF  
HIGH-LEVEL RADIOACTIVE WASTE (HLW) IN GEOLOGIC  
REPOSITORIES; PROPOSED LICENSING PROCEDURES

The present approach to the HLW Disposal process evidenced by the proposed licensing procedures outlined in HR. Vol 44, No. 236 is an action in the proper direction. The Mississippi Office of Energy supports the concept of the NRC's involvement in expanded site characterizations rather than provisional construction authorizations and in the review of the Department of Energy's plans for site characterization and site selection procedures, methods and criteria prior to the use of such procedures, methods, and criteria.

There are, however, several comments and questions that deserve additional attention:

- 1) It is most important at the state and local level that agency representatives and citizens in general have a clear understanding of the roles to be played by DOE, NRC, EPA, and other federal agencies that might be involved. The process now defined tends to cloud and distort the view as to these roles.

Some overview of these relationships should be made an ongoing part of any state and local public hearing and/or meetings.

- 2) There are presently several site characterization decisions in progress by DOE, including three sites in Mississippi. The site characterization reports under the pre-application review should apply in retrospect to these efforts.
- 3) The site characterization report does not address directly the problems of site-related impacts, such as transportation, economic and social, on the local and state infrastructure and population. This should be specifically addressed in any site characterization report.

Secretary, Nuclear Regulatory  
Commission

Page 2

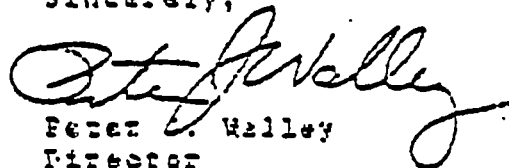
March 3, 1980

- 4) The contents of license applications require plans for coping with radiological emergencies. These types of plans place a considerable amount of responsibility for planning on the state and local governments. The extent and scope of the plans should be defined as in those regulations required for nuclear commercial power reactors.
- 5) In the license amendment to decommission the description of the program for post-decommissioning monitoring should be more specific and require some minimum level of activity in perpetuity.
- 6) The general tone of the Subject C--Participation by State Governments--gives the impression that state and local governments are that of observers and occasional participants provided they generate enough activity.

The consultation process should give the state a stronger, more formalized role in the activities of site characterization, particularly those that relate to site specific data as opposed to generic data. The concurrence part of the consultation and concurrence process would then be addressed by any state and/or federal laws in place. The consultation definition and process should be made clearer to the extent that the state has the procedure available to recommend specific courses of action whereupon the Director of the NRC's Office of Nuclear Materials Safety and Safeguards would respond in writing as to why a particular recommendation was not taken, if so. This would define the state participation program in a formal sense. This, of course, would then modify the approval of proposals process (Section 60.83).

Please be assured that Mississippi is vitally concerned with this process and will provide additional comments and concerns as the issue matures.

Sincerely,

  
Peter J. Walley  
Director

FJW/jz

cc: Governor William Winter  
Attorney General William A. Allain  
Mississippi Congressional Delegation



MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES  
Bureau of Geology  
P. O. Box 5348  
Jackson, Mississippi 39216  
(601) 354-5228



March 3, 1980

United States Nuclear Regulatory Commission  
Office of the Secretary  
Washington, D. C. 20555

Attn: Docketing and Service Branch

Re: Comments on Proposed Rules for NRC Licensing Procedures  
for Nuclear Waste Repositories

Mr. Secretary:

These proposed rules are intended to present requirements applicable to the Department of Energy in submitting an application for a license for a nuclear waste repository. The proposed rules also set forth provisions for consultation and participation in the license review by State Government. With reference to the State participation, it is stated, "the Commission has undertaken a thorough review of the matter and now proposes a more extensive informal involvement during early phases of site characterization and a deferral of formal proceedings until site characterization has been completed." The term informal involvement appears to be somewhat out-of-step with previously stated ideas that target States would be actively involved by being assured of having the opportunity to engage in the decision making process. This idea is even stated in these proposed rules under the Site Characterization Review section. We object to the term informal involvement, especially, if the Federal government (including The President) is sincere in its many statements relative to the States' role of "consulting partners" to the Federal government in matters concerning nuclear waste repositories.

We fully agree with the concept of the Nuclear Regulatory Commission, as well as the States, having the opportunity to consult in and review the site characterization studies to help insure adequate data and safeguards are obtained before a site is finally selected.

It is stated in the Scope of Proposed Rule section, "The technical criteria against which the license application will be reviewed are still under development." Are the States going to be consulted during the development of these criteria, as we have been led to believe? If so, why isn't it indicated in the rules? If not, why not?

It is stated once the wastes have been emplaced the Department of Energy may submit an application to decommission the site. There is no mention of a long-term monitoring system. Will the site be monitored and will the States be involved in the design of same? Will appropriate State agencies be involved in any way in the monitoring process?

United States Nuclear Regulatory Commission  
March 3, 1980  
Page 2

Under Subpart D, Section 60.71 - Records and Reports - Why not also notify the affected State of any deficiency found in the site?

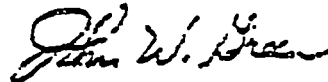
Section 60.73 - Inspections - Section states the Department of Energy shall allow the Nuclear Regulatory Commission to inspect on the premises of the repository. Why not allow appropriate State representatives to accompany on such inspections?

Obviously, we have the idea States are being excluded as much as possible in these matters which are of great concern to them. We sincerely hope the States can be involved in these matters which could have an economic, social and safety effect on them for centuries to come.

We appreciate the opportunity of reviewing these Proposed Rules.

Sincerely

BUREAU OF GEOLOGY



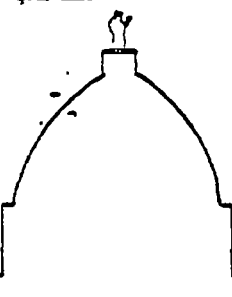
John W. Green  
Environmental Geologist

JWG:js

cc: Hon. William A. Allain  
State Attorney General

Alvin P. Sicker, Jr.  
Acting Director  
Bureau of Geology

*Pl. Make sure that these amounts  
are docketed.  
Pl. Lab to see*



# State of Wisconsin/Department of Administration

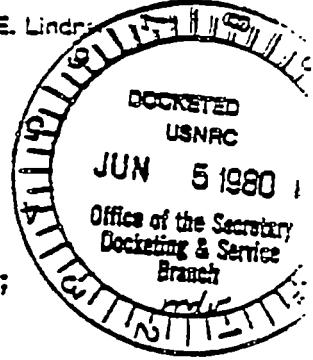
May 27, 1980

DOCKET NUMBER  
PROPOSED RULE PR-2, 19, 20, 21, 30, 40, (31)  
51, 60, 70 (44 FR 70408)

Lee Sherman Dreyfus  
Governor

Kenneth E. Lindner  
Secretary

Mr. I. C. Roberts  
Assistant Director for Siting Standards  
Office Of Standards Development  
U. S. Nuclear Regulatory Commission  
Washington, D. C. 20555



RE: Disposal of High-Level Radioactive Wastes in Geologic Repositories;  
Proposed Licensing Procedures

Dear Mr. Roberts:

On behalf of the Wisconsin Ad Hoc Radioactive Waste Disposal Committee, I would like to thank you for extending to the Committee an opportunity to comment upon the Proposed Rule for Licensing High-Level Radioactive Waste Repositories published on December 6, 1979 (44 FR 70408-70421). Created by executive order on January 22 of this year, the Committee is composed of representatives of ten State agencies and is charged with the development of a unified State position on radioactive waste policies and programs. The full Committee did not hold its first meeting until March 5th, and was therefore unable to meet the March 3, 1980 deadline for submission of written comments on the proposed rule. While we were dismayed that our request for formal extension of the comment period was denied, we appreciate the invitation you extended during our April 29th telephone conversation to submit comments after the closing date.

The Committee is in full agreement with the stated rationale for this NRC rule making proceeding, namely that "the considerable differences between a geologic repository and other licensed facilities, particularly in view of the significance of a repository with respect to the health and safety of future generations, make it desirable to develop rules tailored specifically to geologic disposal of HLW." (44 FR 70408)

The Committee supports the Commission's decision to withdraw the proposed General Statement of Policy published in November, 1978, and endorses the three areas in which the proposed rule departs from that earlier Statement. Specifically, we support the Commission's requirement for review of site characterization plans and site selection criteria in advance of actual site characterization activities [10 CFR 60.11(a)]; the stipulation that site characterization plans must consider a minimum of three sites representing a minimum of two geologic media [10 CFR 51.40(d)]; and the expansion of the definition of site characterization to include exploration and in site testing of the proposed host media [10 CFR 60.2(n)]. Our support for the third point, the expanded definition of allowable site characterization activities, is qualified by our recommendation that public hearings must be held in the vicinity of the proposed site(s) prior to approval of the site

*Acknowledged by card.. 6/5/80.. mdy..*

Mr. I. C. Roberts

Page 2

May 15, 1980

characterization report. Moreover, our support for the expanded definition of allowable site characterization activities assumes that these activities will be carried out in full accord with the provisions of the Wisconsin Environmental Protection Act.

Development of a mined repository in Wisconsin would be considered similar to the development of a mine for mineral extraction. Both processes have four stages: reconnaissance, exploration (drilling), prospecting (taking of samples by trenching or bulk sampling), and mining. The last three activities are regulated by the Wisconsin Department of Natural Resources. Site characterization as described in the proposed rule would be considered prospecting in Wisconsin. Prospecting generally requires an environmental impact assessment, and site characterization activities such as described in the proposed rule would probably require preparation of a full environmental impact statement.

Finally, the Committee appreciates the Commission's endorsement of full State participation in the licensing process. To this end, we are recommending specific changes to 10 CFR Part 60, which will allow more meaningful participation by the affected public and by State and local officials. Our recommendations are attached in an accompanying enclosure. Also attached for your information is a copy of the comments submitted by the State of Wisconsin on the U. S. Department of Energy's Draft Environmental Impact Statement on Management of Commercially Generated Radioactive Waste (DOE/EIS-0046-D).

For the Wisconsin Ad Hoc Radioactive Waste Disposal Committee,

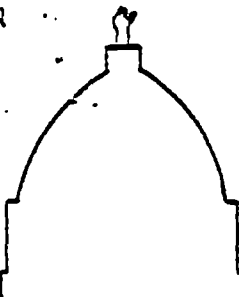
Sincerely,



Robert J. Halstad  
Energy Policy Analyst  
Division of State Energy

RJH:mse:3493C

Attachment



State of Wisconsin/Department of Administration

Lee Sherman Dreyfus  
Governor

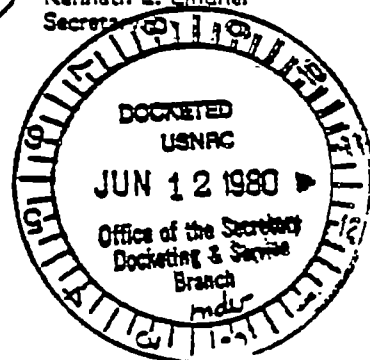
Kenneth E. Lindner  
Secretary

June 4, 1980

32

LET NUMBER  
PROPOSED RULE

PR-2, 19, 20, 21, 30, 40, 51, 60, 70  
(44 FR 70408)



Mr. I. C. Roberts  
Assistant Director for Siting Standards  
Office of Standards Development  
U.S. Nuclear Regulatory Commission  
Washington, D.C. 20555

RE: Disposal of High-Level Radioactive Wastes in Geologic Repositories:  
Proposed Licensing Procedures

Dear Mr. Roberts:

Enclosed are the attachments containing our suggested amendments to 10 CFR 60 and the referenced comments on DOE/EIS-0046-D which were inadvertently omitted from my letter of May 27.

If you have any questions, please call me at 608/266-9810.

For the Wisconsin Ad Hoc Radioactive Waste Disposal Committee.

Sincerely,

DIVISION OF STATE ENERGY

Robert J. Halstead  
Energy Policy Analyst

RJH/db

enc.

acknowledged by card. 6/12/80 smdv



Suggested Amendments to NRC Proposed Licensing  
Procedures for HLW Repositories  
10 CFR Part 60

Subpart B - Licenses

Section 60.11 Site Characterization Report

- (a)(6) [Footnote at end of phrase] To satisfy this requirement, the Commission has established the following criteria regarding public notification by the Department:
- (1) Contacting the Governor or his designee;
  - (2) Coordinating with appropriate state and local agencies; and
  - (3) Holding public meetings in the vicinity of the proposed site(s) to explain the proposals and process to be employed by the Department.
- (b) [Insert at beginning of paragraph] Immediately upon receiving a site characterization report, the Director shall notify the Governor of the State in which the site to be characterized is located.
- (d) [Insert after first sentence] The Director shall transmit copies of the draft site characterization analysis to the Governor of the affected state and to the chief executive of the affected municipality or county.
- (e) [Insert after first sentence] During this period, a public hearing shall be held in the county seat of the county in which the site to be characterized is located.

Section 60.22 Filing and Distribution of Application

- (d) [Insert at end of paragraph] Copies of the application, environmental report, and other amendments shall also be filed with the officials designated by the Governor of the affected State.

Section 60.23 Elimination of Repetition

[Strike last section of paragraph and replace with the following]

Provided, That such references are clear and specific and that copies of the information so incorporated are reasonably available to each recipient of the application, environmental report, or site characterization study.

Subpart C - Participation by State Governments

Section 60.62 Filing of Proposals for State Participation

- (e) [Insert after paragraph (d)] If a State desires to have its representatives accompany NRC personnel on site visits, under Section 60.11(g), the designated contact agency and person(s) shall be specified in the proposal.

1833



STATE OF WISCONSIN  
OFFICE OF THE GOVERNOR

STATE CAPITOL  
MADISON. 53702

LEE SHERMAN DREYFUS

Telephone Number  
(608) 266-1212

July 27, 1979

Dr. Colin A. Heath  
Division of Waste Isolation  
Mail Stop B-107  
U. S. Department of Energy  
Washington, D.C. 20545

Dear Dr. Heath:

Re: DOE/EIS-0046-D-Management of Commercially  
Generated Radioactive Waste

The State of Wisconsin is aware of the sometimes conflicting, but urgent, issues related to the nuclear industry since we rely on nuclear power plants to provide 30 percent of our electrical energy.

While we recognize the primary Federal role in these issues, the problem of nuclear power and radioactive waste disposal are also state concerns and we will accept our responsibilities in these matters.

Wisconsin has a long history of accountable government involvement in proposals affecting the welfare of its citizens. I intend to maintain and improve this trust especially for nuclear waste disposal because of its serious implications to the energy and environmental future of Wisconsin and the Nation.

The responsibility over nuclear power and disposal of radioactive wastes must be a state and federal partnership. The Federal Government must make a special effort to recognize and comprehensively involve the states, local units of government and citizenry in all phases of the nuclear decision-making process.

The information contained in this Draft Environmental Impact Statement has serious overtones toward the future of our state, region and the Nation. The attendant problems will require our full and thorough attention. In order to begin a partnership approach of resolving these problems, I have directed several state agencies to provide my office with an interdisciplinary review of this Draft Environmental Impact Statement. These comments are attached.

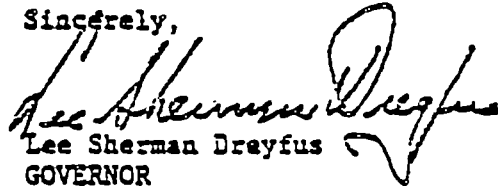
Our review of the DEIS identified several serious inadequacies.

I feel the objectives to provide evidence supporting a specific program have not been substantiated by the information provided in this text.

I am confident that our comments will prove useful in preparing a final document which will be considered adequate within the spirit and intent of the National Environmental Policy Act, case law and the guidelines of the President's Council on Environmental Quality.

We are prepared to assist in any way possible to fulfill our obligations in this matter.

Sincerely,

  
Lee Sherman Dreyfus  
GOVERNOR

Attach.

cc: Honorable Jimmy Carter, President  
Harold R. Denton, Director, Nuclear Regulatory Commission  
Honorable Albert Quie, Governor of Minnesota  
Members of National Governors Association  
Douglas Costle - EPA, Washington  
John McGuire - EPA, Region V, Chicago  
Honorable Gaylord Nelson  
Honorable William Proxmire  
Members, Wisconsin State Legislature  
Stanley York - PSC  
Donald C. Percy - H&SS  
Robert Durkin - H&SS  
Lowell Jackson - DOT  
Mike Early - DLAD  
Ken Lindner - DOA  
M. E. Ostrom - Geo. & Natural History  
Honorable Bronson LaFollette - Attorney General  
John Stolzenberg - Leg. Council Office  
Anthony Earl - DNR

Review of Comments Provided for DOE/EIS-0046-D

Management of Commercially Generated Radioactive Wastes

The Review Committee providing the following comments was formed at the Governor's request and embraced the following state disciplines and jurisdictions:

1. Public Service Commission
2. Department of Transportation
3. Department of Health & Social Services
4. Geological and Natural History Survey
5. Department of Administration, Office of Energy & Planning
6. Department of Local Affairs and Development
7. Department of Natural Resources

For your convenience and ease of response, we have subdivided agency comments into five major categories.

A. GEOLOGICAL/NATURAL ENVIRONMENT - General Comments

1. In view of recent news articles from Mississippi reporting accidental releases of radioactive material from weapons testing sites, how does DOE view the integrity of salt as a waste repository media?

2. Substantial literature has been generated on the "multi-barrier" concept. The DEIS relies on this concept (p. 1.5) to achieve the necessary level of isolation. Yet its application as presented in the document is suspect. There exists serious challenges to the effectiveness of each of the five barriers listed in the report.

- a. The effectiveness of canisters as a barrier has been criticized by a number of sources. The Earth Science EPA report, 520/4-78-004, lists several questions relative to the integrity of the canister system itself. In the DEIS (3.1.59), it is stated that it has not been within the U.S. philosophy to consider canisters as barriers beyond initial emplacement. Furthermore, the DEIS states that an adequate data base has not been developed to support it as such. While the Swedish system is presented as a possible viable alternative, it is designed for reprocessed waste, not spent fuel rod assemblies, the currently accepted U.S. waste form.
- b. The projected performance of the waste form itself to act as a barrier has been challenged by both the Office of Science Technology, and Policy (OSTP) and EPA. Both agencies have suggested that leaching of glass (the commonly discussed form) is a real problem and that its effectiveness as a barrier may not last beyond a decade.
- c. The effectiveness of absorptive overpack to act as a barrier has not been sufficiently documented and serious reservations exist with regard to its sorptive qualities at elevated temperatures below 300°C (those expected in repositories).
- d. Reliance on "the institutions of man" is contradictory to the principle of developing safe waste disposal systems which are not dependent on the changes in social and political systems.
- e. The effectiveness of the host rock itself to act as a barrier is dependent on site specific qualities and cannot be attested to at this time.

For these and other reasons, the multiple barrier concept as applied in the DEIS should be reexamined.

3. The final document should address the interrelationship between deep and shallow groundwater aquifers and surface water systems and potential for transport of radioactive nuclides between the systems.

SPECIFIC COMMENTS

Page 3.1.2, last paragraph - Glaciation is identified as the greatest potential impact on the depth of isolation and erosion. Locally, such as along weak formations and fractured rocks, glaciation will in fact scour to great depths (but not to the depth of a repository). The general impression for the Precambrian Shield is that on an average about two meters of bedrock have been removed. The greatest consequence of glaciation is not erosion, but rather strain induced in the bedrock by the overlying ice column. Depending on the loci of the glacial edge, the stresses induced may be either compressive or extensive. The resultant compression or uplift should be investigated on in situ stress, and the formation or activation of fractures and faults.

Page 3.1.3, fourth paragraph - In addition to adding material on top of a repository, deposition would also lead to a change in the in situ stresses. What effect, if any, would increased compressive stress have on the repository design?

Page 3.1.9, Table 3.1.9 - Hydrologic properties are not adequately summarized with respect to fractures in bedrock. Both waterwell investigations and petroleum exploration have been drilling in fracture traces to great depth (below repository design) in the successful search for appropriate fluids. The argument that all fractures will seal due to high stress in the deep environment is probably not correct. Some fractures will be oriented such that the maximum in situ stress is not oriented perpendicular to the fracture, but rather the fracture may be oriented perpendicular to the least compressive stress, and effectively be open, or can be opened by rather low stress fields.

Page 3.1.9, first paragraph - Recent salt petrography and fluid inclusion work strongly suggests that many salt deposits have been recrystallized, in some cases by local groundwater. The presence of salt does not testify to their isolation from water, but merely testifies that water has not removed significant quantities of salt. The salt may well have been carried some distance and recrystallized.

Page 3.1.11, Figure 3.1.2 - Even as a generalized map, this figure is incorrect. We would disagree with the location of granitic rocks, particularly for Wisconsin. Recent geological mapping in Wisconsin indicates that much of northern Wisconsin is underlain by metavolcanic rocks of Middle Precambrian age. Similarly, the known granitic area of the Beartooths in Montana, and the Adirondacks in New York are not shown. The map could be improved by showing the general distribution of granitic bedrock at depths less than 300 meters, inasmuch as the repository design will be below that depth.

Page 3.1.13, second paragraph - We strongly disagree with limited porosity in basaltic rocks. The Keweenaw volcanic rocks of Michigan, Wisconsin and Minnesota are the host for hydrothermal copper ore deposits, attesting at least locally to rather high porosity.

Page 3.1.13, last paragraph - Rather than granitic, it might be more appropriate to refer to these rocks as igneous and metamorphic crystalline rocks.

Page 3.1.14, Figure 3.1.4 - Kaweenawan lavas are incorrectly located on map. Also, Triassic lavas are much more extensive along the East Coast than depicted. Perhaps metabasaltic rocks should also be depicted on this diagram.

Page 3.1.17, third text paragraph - Two site selection criteria are identified: (1) scientific/technological basis, and (2) presently owned government property. Certainly, federally-owned property may be an easy way to select a site, but that site must satisfy all of the critical technological constraints.

Page 3.1.20, bottom of page - We strongly concur that the site specific investigations should look at a regional framework to better assess the reliability of the repository.

Page 3.1.41, fourth paragraph - Approximately 50 million tons of rock will be left on the surface during operation of the repository. This is 70 million yards of material, or a mound of material 60 feet high occupying one square mile. Has the leaching consequences of this pile been addressed? Can suitable acreages be identified in the model site area to accommodate this material? How will the residual waste rock at the surface be reclaimed?

Page 3.1.48, third paragraph - Anisotropies in the rock body are identified (bedding, etc.). This is contradictory with the avowed goal of an homogeneous host rock. Anisotropies, whether in horizontal or inclined units are anisotropies. Even in horizontal units, lateral anisotropies are common. Horizontal bodies may have greater roof problems than an equivalent weakness along the footwall of the repository.

Page 3.1.56, general sections - Has the Eh-pH dependency of the waste form been investigated? The waste itself, having multiple oxidation states, will have different solubilities with differing Eh-pH. Can we adequately characterize the Ep-pH of groundwaters after they have reacted to some extent with wall rocks? We are not talking of an hypothetical distilled water interaction. Appendix I does not seem to consider water quality.

Page 3.1.72, fourth paragraph - Please discuss the relevance of the EPA Assessment method cited here?

Page 3.1.107, and other pages - What is the volume of material for permanent onsite storage? How does this affect the projected site area? The suggestion is given that the total volume of the mine complex will be completed in seven years. This is approximately 30,000 tons per day, as large as the largest underground metal mines. Is it reasonable to assume that such a large tunnel system can be excavated in such a short time with the available shaft system? Are you sure that there will be few material handling problems?

Page 3.1.122 - State and Federal discharge parameters should be discussed in the section. Ph is not the only controlling factor.

Page 3.1.241, first paragraph - We would hope that airborne and ground electromagnetic systems (INPUT, SLINGAM, etc.) be a standard part of the site investigation. These systems can provide critical detail on fractures, rock type, etc.

Page 3.1.244, (Table 3.1.94 - If your zero corresponds to the year 1986, this project was started in 1973. Is this assumption correct?

Page 3.2.2, third paragraph - Monazite may be a poor example to use to defend the mineralogic options. Geochronologic methods (U-Pb systematics) clearly document that monazite is normally discordant, typically through the loss of uranium. The stability of these minerals should be addressed through geochronologic methods such as U-Pb dating, and uranium disequilibria methods. We think that this kind of an approach will identify that many minerals lose uranium and other elements. Once radioactive decay has occurred (and many daughter elements are radioactive), the new element no longer has the ion size to fit precisely in the crystalline mineral structure.

Page 3.2.13, first paragraph - Detrital metamict grains are not a basis for determining stability. As discussed above, we are not interested in the integrity of the mineral, but rather whether or not the radioactive elements are retained within the structure. Of the minerals tabulated on Table 3.2.11, most, if not all, when analyzed by geochronologic methods are commonly discordant.

Page 3.3.7, first paragraph - Fracture porosity should not be discounted. Fracture traces are systematically used in the exploration of oil and gas to at least three kilometers. In areas of the crystalline shield, water well drilling commonly uses the concept of fracture traces to develop high capacity water wells.

Page 3.4.9, Rock Melting process - A major point missed with rock melting is the consequent melt cooling. Differentiation will result, and the last formed liquids will concentrate elements such as uranium. This will form late hydrothermal liquids of extreme radioactivity. Whether or not this might result in criticality should be investigated.

Section 3.7, Ice Sheet disposal - This entire section should be rewritten. Additional data from the Dry Valley Drilling Project, and the Ross Ice Shelf Project provide significant additional geologic scenario.

Page 3.7.4, third paragraph - A small body of data have been advanced in the past few years of more recent local glaciations (alpine type) and flooding of the dry valleys. Glacial permafrost drift locally exceeds 300 meters in Taylor Valley.

Page 3.3.7, Transportation - How many tons per year are we talking about? The realistic shipping season is two-three months (more like two months). Can the ground transport system handle the projected volume? In recent years, about one aircraft accident per year has occurred. The safety records, although enviable for harsh environmental areas, are still not good enough for carrying large quantities of waste.

Page 3.7.9, Table 3.7.1 - The cost figure seems too low. Recent purchases of C-130's for polar work are expensive. Logistics support is extremely high. The present USARP (NSF) program is about \$40 million per year to support about 1,000 men and women in the summer and about 40 in the winter. About 90 percent of the costs are in logistics, and less than 10 percent is useful science. The environmental impact of large scale technology in polar regions may be too much to pay.



Page 3.7.10, last two paragraphs - Elsewhere in the text sub-ice lakes are identified. Present hydrogeologic studies strongly suggest that the sub-ice lakes provide the groundwater for the discharges in the dry valleys. One drill hole by the Dry Valley Drilling Project (DVDP 13) identified upward moving groundwater at  $-16^{\circ}\text{C}$  at a depth of 150 meters. The water appears to have moved through fractures in the crystalline bedrock. Preliminary heat flow studies by DVDP suggest high heat flow (equivalent to the basin and range province of the U.S.), and the possibility that uranium has been leached to a depth of 300 meters.

Section 3.8, Inclusive, "Reverse Well Disposal" - The section adequately enumerates the advantages, disadvantages, and potential problems that must be addressed if well injection is to be used as a method of radioactive waste disposal. There are several considerations which, although briefly mentioned in the report, realistically cast serious doubt on the entire concept of utilizing well injection as a safe method of radioactive waste disposal.

Beginning with the shale-grout method, the critical aspects are the control of the orientation of fractures in which the waste is implaced, the leachability of the shale-grout mixture and its stability over time in a groundwater environment, the relatively shallow depth at which the waste is stored and the problems in maintaining an undisturbed or unpenetrated geologic environment over long periods of time.

In isotopic homogeneous model studies, control of hydrofracture orientation is accomplished in a relatively straight-forward manner. In a real geologic environment, anisotropy and inhomogeneity are the rule. In addition, existing fracture systems controlled by post depositional stress on the rock units and later tectonic forces are present in rock units from granite to poorly consolidated glacial till. Those zones of weakness are difficult to detect in rock cores but will be the controlling factor in the orientation of artificially induced fracture systems, as important as the vertical and horizontal stress components discussed in Section 3.8.

The effects of existing fracture and joint systems should be addressed in a much more specific manner. It is probable that the presence of fracture systems will be found in any proposed repository zone and that their presence would be cause for the elimination of the shale-grout disposal method.

A further note here which is also applicable to the other following points of discussion is that in groundwater flow through shales of low permeability it is the fracture system which will control the amount of water flowing through the unit and not the low permeability of the shale itself.

This leads to the leachability and stability of the grout mixture. The binding agent is a combination of calcium carbonate and calcium silicate, both of which will be under-saturated in most flow systems encountered at the shallow depths required for this system. The stability of this binding agent should be addressed in more detail. It is not sufficient to rely on the presence of the shale to sorb any ions released by the dissolution of the cementing agent as most flow will be occurring in fractures created in the shale-grout mixture.

The relatively shallow depth of 300 to 500 meters required for the shale-grout method is within the normal depth of local to intermediate groundwater flow systems. As such it is a common depth to which water wells are drilled. It would be difficult to ensure that no wells have been drilled in an area prior to its selection as a waste disposal site and to guarantee that the site will continue to be safe over the time scale considered. This requirement is much more critical for the shale-grout method because of its shallow depth.

The deep well injection concept has many apparent advantages over other more costly concepts. One point which must be kept in mind in evaluating this method is that the waste, once it enters the reservoir rock, is completely mobile and free to move in response to thermal and chemical gradients, as well as hydrostatic gradients. In deep sedimentary basins, flow paths may be as long as 500 miles and travel times in excess of 10,000 years, if the flow system is undisturbed. If waste is injected into these zones, radically different thermo-chemical-hydrostatic gradients are created instantly. The flow system response to this type of stress is not fully understood and inadequately modelled with the numerical tools available at present.

The deep sedimentary basins represent the most suitable environment for disposal using the deep well injection system. However, if it is necessary to site a waste processing facility on an area which is not underlain by a groundwater flow system having very low gradients and extremely long residence times, then the deep well injection concept should be eliminated as a viable method of waste disposal.

Appendix D Models Used in Dose Calculations - The following is stated in the Draft Environmental Impact Statement, page D.1: Dose to Regional Population. Calculational models and parameters used in evaluating the radiological dose from both chronic and accidental releases of gaseous and liquid effluents from the facilities and processes investigated in this study have been selected to give a realistic but conservative appraisal. These models represent the state of the art, keeping in mind that, because of the natural variability of the input parameters, excessive sophistication does not necessarily lead to more accurate results.

The following questions concern the input parameters for models used in dose calculation:

- 1) What accuracy is required for input parameters derived from environmental measurements of radioactivity?
- 2) Can the computer programs FOOD and PABLM noted on page D.3 use existing data from nuclear power plant environmental measurements to assess doses to the population? If so, could the Department of Energy make these calculations using facility or state data?

Appendix F A Reference Environment for Assessing Environmental Impacts Associated with Construction and Operation of Waste Treatments, Interim Storage and/or Final Disposition Facilities - This section contained a variety of data relevant to land use, hydrology, meteorology, ecology, and wildlife. However, no baseline data relevant to existing radiation background levels is cited. Perhaps this is not a critical omission in the Draft Environmental Impact Statement but examples of existing natural radioactivity levels would be helpful to the reader. Examples of existing

radioactivity levels for man-made or naturally occurring radionuclides in surface water, drinking water, air, and other sampling media would illustrate conditions prior to existence of a radioactive waste disposal site. A discussion on natural background for the reference site might also be helpful to the reader in understanding the radiological significance of measurements from monitoring data.

Further significance of the pathway parameters used on pages F.15-17 could be demonstrated if referenced to a model radioactivity surveillance program. Examples of the sampling media could be more directly related to the discussion in Appendix D, Models Used in Dose Calculations, concerning Ingestion of Food Crops and Animal Products and Accumulated Doses from Foods.

The reference environment in Appendix F seems rather specific. Although this is supposed to be a "generic" site, the geology, hydrology, topography seems to describe the Waupaca/Shawano County area of Wisconsin, with the major metropolitan area the Fox River Valley including the metropolitan Green Bay to Oshkosh area. If this in fact is close to the reference site, consideration should be given to the glacial rebound in the area. This rebound will change the in situ stress at the site, and could lead to changes in the surface drainage. The rocks in this area are part of a rapakivi massif (the Wolf River Batholith). This general rock type is noted for its ease of weathering to reasonably deep depths.

An alternative area that would satisfy many of the "generic" site requirements is Waushara County, about 100 kilometers south of the Waupaca area. The bedrock in this area is massive red granite, a granite that has high compressive strengths, and is commonly studied for rock mechanic properties. Mirolitic cavities reportedly have been found in this granite, but their presence has not been confirmed. This area is close to the cryptovolcanic structure at Glover Bluff in Marquette County, and lies close to a major gravity gradient that may reflect major crustal differences to the north and south. This zone is also the loci of several Wisconsin earthquakes.

Inasmuch as other "generic" sites were not extensively described, the rather extensive description of the north central site suggests that some studies have been undertaken, and serious consideration is being given to sites other than salt, Hanford and NTS.

An additional alternate area that satisfies all the information of the generic site is in Sherburne County, Minnesota, northwest of Minneapolis, and in the vicinity of the Monticello power plant of MSP. The Precambrian bedrock in this area is the Reformatory Granite, a relatively massive rock, but almost every exposure contains inclusions of hornblende schist, biotite schist, or garnetiferous biotite schist, gross inhomogeneities in terms of homogeneous granite.

The point in the preceding paragraphs is that a number of sites in the Upper Midwest satisfy the engineering criteria for a repository, and (albeit possibly small) engineering data to exist for "generic sites" in the Upper Midwest, that some site specific studies may well have been undertaken. If, in fact, siting may be directed towards the Upper Midwest, consultation should be made with appropriate state agencies to adequately identify suitable areas, rather than DOE proposing a site that may well have serious drawbacks when viewed from a state perspective.

Why was the reference environment described in Appendix F used in this document and no other additional reference environments included? Does this imply crystalline disposal is DOE's preferred alternative?

Appendix P, page P-42 - See earlier comments on monazite. Consideration particularly in the discussion of zircon, should be directed toward the mechanisms for discordancy in the geochrologic systems (U-Pb). Two mechanisms are pertinent: the diffusion loss mechanism of Tilton, and the dilatancy loss mechanism of Goldich and Mudrey. Diffusion models have the daughter lead isotopes diffusing from the zircon at a rate proportion to the amount of uranium in the sample through various radiation damage models. A large body of data support this model. The dilatancy model has lead loss due to low temperature effects related to uplift and release of stress. Both models suggest that various ions are not held quantitatively in the structure, although the main framework of the zircon may remain intact. Similar models can be advanced for other radioactive minerals.

## B. TRANSPORTATION - General Comments

1. The evaluations of the various technologies for waste management discussed in the body of this report fail to deal directly with transportation details in connection with the wastes discussed. Although it is apparent that the document is intended to present the advantages and disadvantages of the various methodologies for disposing of commercially generated radioactive wastes, it seems that the concept of waste transportation should be an important factor in judging the feasibility and impacts of these options. The evaluations made include such things as socio-economic factors and increases in demands for services. However, there is no reference to the factors involved in transporting wastes, such as, adequacy and availability of present systems, risk, safety, etc.
2. Some of the concepts discussed in Chapter 3.0 "Technology Alternatives for Final Disposal" are much more transportation dependent than others. Even though it appears that island disposal, subsealed geologic disposal, ice sheet disposal, and space disposal are not the concepts that are the most likely to be readily available for commercial usage, they are nonetheless the ones that would probably have the most substantial transportation related impacts. The feasibility of accomplishing the required transportation as well as the impacts associated with them should be studied and presented as part of the development of each concept.
3. In Wisconsin, transportation considerations would include both land and water routes. The Great Lakes system could possibly be used to reach a northern location. Both rail and highway facilities would be possible corridors throughout the state. Obvious considerations such as capacity of facilities, ability to serve a new demand, availability of equipment, etc., would have to be studied. Also, a very important factor is that of public reaction to transportation of hazardous wastes. This is a serious obstacle to overcome and deserves to be very carefully considered. Public awareness and concern is very strong today and is especially likely to be aroused in a rural area.

4. It would seem reasonable to give serious consideration to locating repositories near adequate existing rail facilities to potentially maximize transportation efficiency.

5. In judging environmental impact from transportation connected with moving radioactive wastes, it is important to evaluate the standard environmental impacts associated with any transportation, such as air pollution, noise, and water quality impacts.

#### SPECIFIC COMMENTS

Page 3.1.25 (fourth paragraph) - Transportation demands are not adequately addressed. What grade of highways and railroads will be needed? How frequent will shipment be? Will this disrupt the normal traffic flow? What would be the routing from the various power reactors to the disposal site? How might transportation routing affect major metropolitan areas? Will vehicles be escorted?

Page 3.1.116, Tables - Denormalize the values. Exactly, how many tons of materials are we talking about? How many cubic meters of concrete (total) etc.? Can the transportation and power grid handle the amount of material, or will additional roads, rails and high-power lines be needed? What is the daily electrical use, and what percentage of the model site is this? Will additional local power facilities need to be built? Or, is this covered in Table 3.1.85 on page 3.1.217?

Appendix F - Although it is clearly stated that the reference environment is hypothetical, it appears from a cursory overview of the description that such a site could very possibly be located in Wisconsin. From a transportation viewpoint there would have to be serious consideration given to the transportation problems associated with development of any of the facilities described for this reference environment. Again, these factors are not considered in the description given. There is no reference to existing transportation facilities in the region or of the problems likely to be involved in placing the wastes at that particular site for disposal.

Appendix N - This section deals generically with some of these transportation issues. However, they are treated entirely separately and not as a part of the total cumulative impacts of a particular method of management. It would be difficult from this appendix to determine a direct impact relationship between the transportation factors discussed there and the disposal techniques discussed in the body of the document.

#### C. NUCLEAR GROWTH ASSESSMENT - General Comments

1. One of the documents stated objectives were to "exhibit neutrality regarding nuclear growth." (p.vi) As the reference scenario, your agency has chosen a high growth projection which assumes 400 GWe of installed nuclear capacity (approximately 400 reactors) by the year 2000. (Pp. 1.5, 1.7, 2.3, 2.1.2) The choice of an alternative scenario, a low growth projection, is unclear. In the Summary, an alternative scenario assumes 225 GWe installed nuclear capacity in the year 2000. (Pp. 1.5 and 1.11)

Throughout the remainder of the DEIS, the alternative scenario assumes 250 GWe installed nuclear capacity. (Pp. 2.3 and 5.6) Is this a typographical error?

In order to meet its stated objective of presenting all analysis from "the standpoint of alternative nuclear growth futures which will bracket what is now thought reasonably possible," (p.vi) consideration should be given to:

a. A high growth scenario of 550 GWe installed nuclear capacity by the year 2000: The Atomic Industrial Forum has projected that 550,000 megawatts of installed nuclear capacity by the end of the year 2000 is achievable, given "regulatory reform, resolution of fuel-cycle and proliferation questions and the electric utilities ability to compete more favorably in the money markets for capital." (AIF, "The Nuclear Industry in 1978," News Release dated January 17, 1979, p.8).

b. A low growth scenario of 150 GWe installed nuclear capacity by the year 2000: This would bring the stated low growth scenario into agreement with that of the Interagency Review Group on Nuclear Waste Management which examined a low growth scenario of 148 GWe in its March, 1979, Report to the President (Appendix D, p.3). According to data provided by the Atomic Industrial Forum, a low growth scenario assuming 150 GWe would reflect the capacity of the 72 existing reactors with operating licenses (52.4 GWe) plus the capacity of 92 reactors with current construction permits (101.1 GWe) as of June 30, 1979. (Telephone conversation with Mary Ellen Warren, AIF Statistician, June 28, 1979)

2. The discussion of the effects of different energy projections in the DEIS is contradictory and misleading. At several points the document states that "the quantity of wastes can be directly scaled to the total energy generated during operating reactor life cycles." (p.1.5; see also Pp. 1.1, 2.1.26, and A.47) The DEIS further states that the alternative growth scenario, which assumes an installed nuclear capacity of 250 GWe in 2000, would generate HLW or spent fuel canisters at a ratio of 0.64 compared to the reference scenario, which assumes installed capacity of 400 GWe. (Pp. 2.1.27, A.47, and A.55)

From this information, a reader could logically assume that the alternative growth scenario would generate one-third less waste, and require one-third less waste storage capacity, than the reference growth scenario. A reader could therefore conclude that the number of repositories required for the alternative growth scenario would be one-third less than the three to ten repositories (depending upon fuel cycle and geologic media) which Tables 3.1.84 to 3.1.87 (Pp. 3.1.215 3.1.222) indicate are required for the reference scenario. However, the DEIS does not provide any information on the specific number of ultimate repositories required under the alternative scenario. This is a serious omission, since environmental impacts will vary according to the number of repositories which are actually constructed.

The DEIS not only omits the required number of repositories for the alternative scenario, it is misleading with regard to the required number of predisposal facilities. At three points in the DEIS, the discussion of the scaled relationship between total energy generated and the resulting waste quantities is immediately followed by statements which might lead a reader to suppose that the total number of predisposal facilities required is not significantly reduced under the alternative growth scenario. (Pp. 1.5, 2.1.27, A.47) The reader is referred to Appendix A for details. The information provided in Appendix A, Tables A.46 and A.47, however, indicates a significant reduction in the number of predisposal facilities required for the alternative growth scenario. For the once through fuel cycle, the ratio of Independent Spent Fuel Storage Facilities and Spent Fuel Packaging Facilities (5 of each, compared to 8 of each) is 0.63 compared to the reference scenario. For the Uranium and Plutonium recycle, the ratio of Fuel Reprocessing Plants (5 compared to 7) is 0.71, the ratio of Mixed Oxide Fuel Fabrication Plants (6 compared to 10) is 0.60, as compared to the reference scenario. Please calculate the number of ultimate repositories required for the alternate growth scenario.

In order to clarify the effects of different energy projections:

- a. Specify the number of ultimate repositories required for both the reference and alternative scenarios for each fuel cycle and geologic media.
- b. Specify the number of ultimate repositories required for a high growth scenario assuming 550 GWe installed nuclear capacity by the year 2000, and for a low growth scenario assuming 150 GWe installed capacity.

3. The lack of a waste disposal policy has brought into question the viability of existing and future nuclear power programs. Economic as well as environmental uncertainties regarding waste disposal have contributed to the unattractiveness of nuclear program expansion, while existing plants face concerns of shutdown and/or additional expenditures due to spent fuel storage inadequacy.

#### D. SITE SELECTION - General Comments

1. The DEIS endorses the IRG recommendation for a regional site selection approach to radioactive waste management (p. iv, 1.2, 4.32-4.33), but does not provide a comparative analysis of the regional (multiple) and national (single) repository approaches. The final IRG Report (p. 53) specifically directs the DEIS to provide this analysis to support its contention that regional siting would reduce waste transportation requirements and provide redundancy that would hedge against the possibility of an unexpected repository shutdown. The DEIS, however, does not present sufficient information to substantiate the transportation and redundancy advantages which are claimed, thereby weakening the entire case for regional site selection.

2. In early 1977, the Energy Research and Development Administration pledged to include State Officials in any site investigations conducted in Wisconsin. G.W. Cunningham, then Director of ERDA's Division of Waste Management, made the following commitment in a letter dated April 13, 1977, to Commissioner Matthew Holden, Public Service Commission of Wisconsin:

"We at ERDA understand the public concern that the solution we implement be safe and environmentally acceptable. We would like to reassure you of our commitment to work with you and other state officials to develop the siting criteria in achieving these objectives. We would propose to initiate our investigations of the geology in coordination with the state geologist and to keep you advised of the progress of the geological investigations. Simultaneously, we would like to outline whatever mechanism for joint discussion of the program that you feel needs to be addressed for the longer range procedures regarding potential siting of such a facility in Wisconsin."

At every major decision-making point since 1977, the State of Wisconsin has reiterated its support for maximum state participation in the siting process. A number of Wisconsin representatives stressed the importance of state involvement during the September, 1977, NRC workshops on State Review of Site Suitability Criteria for High-Level Radioactive Waste Repositories. During the spring and summer of 1978, the State of Wisconsin provided technical assistance to the Nuclear Power Subcommittee of the National Governor's Association, and concurred in the policy statement drafted by the Subcommittee and adopted at the 1978 NGA annual meeting. That statement reads:

Early in the process of preparing environmental impact statements for specific sites or facilities, the Department of Energy should involve state and local officials. State and local officials should assist in furnishing the information needed for these activities. DOE must obtain state concurrence prior to final site determinations.

In December, 1978, the State of Wisconsin again emphasized its position in comments upon the IRG Draft Report. While in agreement with the IRG approach under which the States "would continue the involvement begun in the planning phase by reviewing early site characterizations and potential sites of disposal facilities," (IRG Draft Report, p.52), Wisconsin expressed dissatisfaction with the IRG's ambiguous definition of state "concurrence." In a letter of December 11, 1978, to IRG Chairman John Deutsch, the Director of the Wisconsin Office of State Planning and Energy, Victoria Potter, urged that "provision be made, in whatever process of consultation and concurrence is developed, to ensure that states already having adequate siting programs for construction and/or disposal be minimally disrupted." The Wisconsin Legislature is currently considering a proposal (Assembly Bill 212) which would require a state Certificate of Compatibility for construction of radioactive waste disposal facilities in the State.



To address these institutional issues, the final DEIS must:

a. Specify a firm mechanism for state and local participation prior to detailed site investigations in Stage III of the proposed site selection process; and

b. Identify the "socioeconomic" and "sociopolitical" factors which the DEIS states will be evaluated early in Stage III. Provision should be made for public participation in these evaluations.

3. Environmental analysis cannot be done in detail until the site is specifically defined. While use of the reference site concept is useful for a generic comparison of several alternative courses of action, unique site characteristics which are outside the scope of the environmental criteria contained in the DEIS must be evaluated when specific sites and project designs are selected.

#### E. GENERAL AGENCY CONCERNS/COMMENTS

1. The DEIS is a step in the process of developing a national program for radioactive waste disposal.

2. The forward or background sections of the DEIS should have a discussion of the process and schedule being used to resolve radioactive waste problems. The reader is told that this document provides the required environmental analysis for the selection of a national strategy for disposal of high level radioactive wastes from the commercial fuel cycle. The reader is forced to presume that the final EIS will be followed by: 1) a decision on a particular national strategy for waste management, 2) research and development activities (including those defined in Section 3.16), 3) a public site identification and selection process, and 4) a site specific licensing process including the development of a site specific EIS. There is not a concise statement of the likely sequence of events, or of what final outcomes are likely.

3. The assessments of impacts through abnormal sequences as well as routine operations produce a false sense of predictability. In reality the information contained in most of the tables between Table 3.1.29 and 3.1.92 are based on a series of nested assumptions beginning with an assumed initiating event (e.g., meteorite, nuclear warheads, encroachment by drilling, leaching, earthquakes, etc.), followed by an assumed transport mechanism (e.g., groundwater ingestion, inhalation of airborne radioactivity, etc.), and followed by an assumed environment to be affected. These are very difficult to predict over the long term, although their significance can be assumed away through statements such as "At about 1.4 million years after disposal, assuming the region and its population remain unchanged. . ." (pg. 31.162). Regarding the quantitative analysis, it is unclear from the DEIS as to what assumptions are made and what their effect is. This deficiency might be alleviated through the use of sensitivity analysis for assumed variables to determine how substantially they affect the outcome. (This type of analysis was performed for portions of the cost estimates.) The reason for the selection of certain assumed values should have been stated. Additionally, while the document was too massive to check each

table for consistency, a spot check identified an error in the calculated dose from a repository breach in Table 3.1.37, where the dose received after one million years is greater than the dose received after one hundred thousand years.

4. From the aspect of a utility regulatory commission, the DEIS inadequately described the cost of radioactive waste management. There was insufficient information to determine whether the projected costs of the various options are realistic.

5. We interpret the objectives of this DEIS to be two-fold:

1. To provide evidence supporting the IRG's March 1979 recommendations on this subject.

2. To replace the DEIS (WASH-1539) prepared September 1974 by the Atomic Energy Commission concerning the program for developing interim and permanent repositories for high-level and transuranic radioactive wastes.

In the reviewers opinion these objectives have not been met.

6. In the summary contained on page 1.1 of Volume one it is stated:

"In evaluating the various technical strategies, issues and environmental impacts have been analyzed as best understood currently. Based on the analysis presented here, and in the light of the greater depth of knowledge on geologic disposal; DOE proposes that: (1) the disposal of radioactive wastes in geologic formations can likely be developed and applied with minimal environmental consequences, and (2) therefore the program emphasis should be on the establishment of mined repositories as the operative disposal technology."

The reviewers feel that the above conclusions have not been substantiated by the information provided by the text. Such conclusions are at this time premature.



PROPOSED RULE 19, 20, 21, 30, 40, 51, 60, 170  
(44 PR 70408)

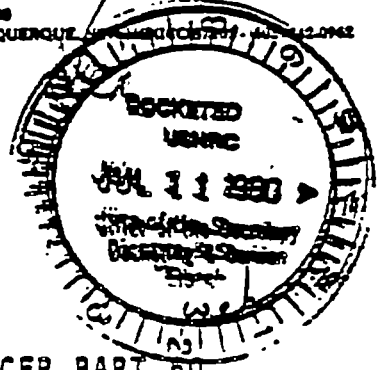
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June 27, 1980



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Mr. Craig Roberts  
Assistant Director for Siting Standards  
Office of Standards Development  
U.S. Nuclear Regulatory Commission  
Washington, DC 20555

RE: COMMENTS ON PROPOSED REGULATION 10 CFR PART 60,  
SUBPART C.

Americans for Indian Opportunity is a national, non-profit Indian advocacy organization which promotes the reality of tribal sovereignty in all areas affecting tribal welfare, including natural resource ownership, economic development, and environmental protection. Tribes are self-governing units and are not subdivisions of states, as are counties and municipalities.

Our concern is that Part 60, Subpart C, entitled "Participation by State Governments," does not mention Indian tribes. Tribes, as sovereign governments, have every right to be involved in the licensing procedures for DOE's high-level radioactive waste repositories. The threat of radioactive contamination to water supplies or rivers used for fishing is, in one respect, greater for Indians than for other citizens. Indians have been guaranteed their reservation lands through treaties and other acts of Congress in perpetuity. If their lands become contaminated, they have no other lands to go to. Evacuation is meaningless to Indian tribes.

Additionally, tribes who have off-reservation hunting and fishing rights must have the same rights regarding these off-reservation areas as they do on-reservation areas. These are, after all, property rights which may not be denied without due process of law.

Tribes are greatly concerned about siting of radioactive waste repositories on or near Indian land. Tribes should be included in all aspects of consultation and license review to the same extent as states. Sections 60.61, 60.62, and 60.63 should all be amended to give tribes the same level of participation and review as states.

Thank you,

*LaDonna Harris*  
LaDonna Harris  
President

Acknowledged by *[Signature]*

LDH:trt

ENCLOSURE "C"

UPDATED ENVIRONMENTAL IMPACT APPRAISAL  
FOR  
10 CFR PART 60  
Disposal of High-Level Radioactive Wastes in  
Geologic Repositories--Licensing Procedures

INTRODUCTION

For the most part, 10 CFR Part 60--Licensing Procedures, sets forth straightforward administrative requirements which in themselves have no impact beyond the resources needed to prepare, submit, and review the licensing documents (application, reports, letters, etc.). However, one requirement could conceivably have a significant impact and therefore warrants the following examination.

MULTIPLE SITE CHARACTERIZATION

A requirement associated with the final rule 10 CFR Part 60 and conforming amendments (specifically 10 CFR 51.40) is that prior to selection of a site as a proposed repository and subsequent submittal of an application for construction authorization, the Department of Energy (DOE) must characterize a number of sites in different geologic media. That is, DOE must conduct a program to establish the value and range of key geologic and hydrologic characteristics at several potential repository sites. The NRC staff expects that this will be done at five or six sites. Further, the NRC staff expects that the program of characterizing sites will include exploration and in situ testing at depth for each site characterized. While not explicitly required, the NRC staff has

concluded that it would be unlikely that DOE could develop the quantity and quality of site-specific information needed to support an application for construction authorization without such exploration and testing at depth. The basis for this conclusion was set forth at 44 FR 70409.

#### APPRAISAL OF IMPACTS

Preliminary Survey. The environmental impacts from preliminary survey work would be those arising from field work performed. For example, topographical surveys would involve 2 or 3 surveyors traversing the area of a site. Some vegetation might be destroyed in laying out survey lines, establishing bench marks, and setting up environmental monitoring equipment, as well as through the possible use of one or two off-road vehicles to transport the survey team and their equipment. Test boring and down hole logging would require a drill rig, water truck, and one or two support trailers. A road would need to be made to the drilling sites if none existed.

Initial Surface Exploration. The impacts for surface exploration largely will arise from the borings and downhole loggings done in this step. These impacts will be about the same as any drilling and logging done during the preliminary survey work. Additional impacts may accrue from seismic traverses if heavy vehicles or small explosive charges are used to produce the necessary ground vibrations. Gravity surveys and aeromagnetic surveys have little impacts. The former consists of taking readings from hand-carried instruments every several yards along previously established survey lines. An aeromagnetic survey involves a fly-over of the area in an instrumented light plane.

Exploration at Depth. The major impact arising from site exploration will be the approximately 5500 cubic of yards spoils from excavation of an exploratory

shaft and a small room at its base.\* This is about 10% of the spoils from a main (20 ft diameter) shaft and less than 0.1% of the total spoils which can be expected from complete excavation of a repository. If the spoils were to be trucked offsite, the impacts could be lessened considerably. At about 10 cubic yards per truckload, approximately 6 truckloads per day would be taken offsite for the estimated 6 months needed to drill the exploratory shaft. The use of tarp coverings or shelters for certain types of spoils which may release dust to the air or might be particularly susceptible to the introduction of water (e.g., rain) would lessen the chances of the materials being transported away from the site by wind or water action. Support equipment for exploration and testing at depth would consist of 2 or 3 equipment trailers, 1 instrument trailer, the drill rig, a hoist, 2 or 3 large earthmoving trucks while the exploratory shaft is being drilled, and 1 small truck thereafter, a water truck, and 1 or 2 miscellaneous equipment trucks or vans. Atmospheric emissions related to fuel consumption of this equipment should not exceed Federal air quality standards. A parking lot of about 25 or 30 car capacity and a fence surrounding the area would also be needed. Total personnel would be in the neighborhood of 50 or fewer individuals. Mining operations which do not employ local workers may expect an increase in this number as a result of the presence of some families in addition to the workers themselves.

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\* The excavated volume of a 3000-ft shaft approximately 6 ft in diameter is roughly 90,000 cu ft or 3200 cu yds. The volume of spoils will be approximately 1.6 times the excavated volume. The 20 ft x 20 ft x 8 ft room at the base of the shaft will contribute about 5000 cu ft for a total of about 150,000 cu ft or 5500 cu yds. These spoils could be disposed of in a pile about 200 ft long, 100 ft wide, and 8 ft high.

## SUMMARY OF IMPACTS

Environmental. Fugitive dust and erosion runoff from roads, cleared areas and spoils tips present the dominant environmental impact at typical sites. However, these largely can be mitigated by careful landuse procedures. Surface dust movement may be minimized by revegetating the area as soon as possible. Filters in the mine ventilation system will restrict the escape of dust to the surface. Proper grading and spreading gravel on roads and cleared areas will minimize erosional runoff impacts. The use of stabilization techniques for spoils tips, or alternatively, the removal of spoils offsite by truck will also lessen impacts. The small size of the area impacted (on the order of an acre) combined with the relatively large area of formations of interest, allow impacts to be further lessened by exercising judgment in the choice of locating sites from which to conduct exploration and testing.\*

The relatively small physical size of the project tends to lessen the potential for long term subsurface effects, as it does for short term impacts upon nearby habitats, aquatic environments, and local flora and fauna. Potential detrimental environmental effects due to groundwater investigations can arise from improper use of toxic well drilling fluids, ground-water tracers, and the formation of ground-water pathways due to improper sealing of boreholes. These potential problems can be alleviated by proper borehole construction and testing procedures as outlined in the contractors design specifications. Experience with petroleum exploration and subsurface mining indicates that the relatively few (~ 6) boreholes to be drilled and the small shaft to be excavated do not provide significant avenues for mixing or contamination of aquifers which may be penetrated. Neither is there significant potential for subsidence, both

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\* The extent of formations of interest can range from a few miles across, for example, salt domes or granitic plutons, to several hundreds of miles common to bedded salt or basalt flows.



because of the small size of the exploratory shaft and because of the expected competency of the rock unit to be explored.

Occupational Accidents. No significant impact resulting from the operations involved in developing the site characterization shaft and storage facilities are foreseen. Normal mining practices are expected to be followed, but with a greater degree of quality control than is necessary in standard industrial operations.

Currently, equipment suitable for drilling and excavation procedures that might be used for site characterization is available to the mining industry. Regular maintenance of all equipment during the operations should minimize the number of accidents attributable to equipment failure. An analysis of the average annual number of fatal and nonfatal accidents related to underground nonmetal mines was presented by Koplik, Pentz, and Talbot (1979) in NUREG/CR-0495 TR-1210-1, based upon Mine Safety and Health Administration data. Statistics accumulated for the 1973-1976 period indicated an annual average of 9 fatal and 383 nonfatal accidents during  $10.5 \times 10^6$  average manhours. This translates to 0.85 fatal and 35.9 nonfatal accidents per  $10^6$  manhours. Distribution of the average number of accidents during 1973-1976 was reported as follows:

<u>CATEGORY</u>	<u>FATAL (%)</u>	<u>NONFATAL (%)</u>
Falls of groundwater inrush, rock burst	27.8	11.2
Haulage	5.6	13.5
Machinery	5.6	18.5
Material handling	2.8	22.8
Falling material	8.3	2.1
Electrical	13.9	1.2
Explosives	8.3	1.3
Fire/Suffocation	13.9	0.3
Miscellaneous	13.9	29.1

The largest number of fatalities is attributed to unexpected geologic or hydrologic events. It is expected that the detailed geologic, geophysical and hydrologic information provided by preliminary explorations of potential sites should significantly reduce the risk of unexpected geologic occurrences.

To estimate the likelihood of accidents involved in mining a shaft and room from the average annual accident incidence of the nonmetal underground mining industry, we assumed an operations timetable of approximately  $6 \times 10^4$  manhours per year (2 forty hour shifts/week, 15 men on each shift). The statistics compiled from MSHA data would translate to less than 0.06 expected fatalities and less than 2.4 expected nonfatal accidents for each exploratory shaft and room excavated. Extra precautions associated with site characterization mining operations should reduce these figures even further.

Increased Population. Socioeconomic impacts created by the relatively small number of workers associated with the mining operations should not be significant. In evaluating the projected socioeconomic impact of the much larger work force predicted for repository construction, the DOE concluded that the number of individuals who would take up residence near the site barely exceeded 2.5% of the site county populations typical of the southeast and midwest. Higher values were estimated for southwestern sites where there is a shortage of available local construction workers (DOE/EIS-0046-D). A conclusion drawn by DOE analysis was that project-related augmentation of population which does not exceed 10% of the baseline population would not produce significant impacts. Although the availability of local workers, the proximity to towns and the populations of the towns are factors which will vary with each locality selected for site characterization, the small number of workers involved in site characterization projects should be readily absorbed in even sparsely

populated regions. Further, it is expected that social services such as sanitation and fire control needed for the project can be provided onsite and will not burden local agencies. Since occupational accidents resulting in human injury are estimated to be extremely infrequent, no significant impact upon local medical facilities is foreseen.

### CONCLUSION

Other than the money, manpower, and fuel consumed in site characterization, no impacts should be irreversible. The boreholes can be sealed, the excavated shafts filled in, the remaining spoils trucked offsite, and roads and cleared areas replanted as appropriate. Damage to habitats and stress on endangered or rare species can be maximized or avoided altogether by careful selection of the site from which the underground formations are explored. Environmental stress during the exploration at a site can be minimized by adequate attention to planning and operations. Socioeconomic stress on nearby communities should be insignificant because of the relatively small number of workers involved at any site. It is recognized that the construction of roads and deposition of spoils in remote areas may detract from aesthetic and recreational values. These impacts may be sufficiently significant in particular instances to warrant their site-specific examination prior to the Department's proceeding with site characterization. However, given the short duration of site characterization, the substantial reversibility of the impacts, the small areas disturbed and quantities of spoils generated, and the opportunity to exercise judgment in selecting a site in a suitable formation or in selecting candidate areas for investigation, the harm associated with the general requirement that multiple sites be characterized is too small and speculative to be considered significant.

In sum, there appears to be no reason to expect any significant or lasting impact upon the environment from site characterization at any site. Moreover, when considered in the larger context of the continental United States, neither would the characterization of several sites produce any significant or lasting environmental impact. Accordingly, no environmental impact statement need be prepared for this requirement.

ENCLOSURE "D"

NRC ISSUES REGULATIONS ON PROCEDURES FOR REVIEWING  
WASTE REPOSITORY APPLICATIONS

The Nuclear Regulatory Commission is adopting new regulations on procedures for reviewing a possible application from the Department of Energy (DOE) for a license to receive and dispose of high-level nuclear wastes at a geologic repository.

The NRC has licensing and regulatory authority over DOE facilities used primarily for the receipt and storage of high-level radioactive wastes resulting from activities licensed by the NRC. DOE is responsible for developing the methods and technology for permanent disposal of the high-level wastes in a federal repository and for submitting a license application for a potential repository.

The repository licensing procedures contained in the new regulations are divided into five steps:

(1) License preapplication review--The regulations state that, as soon as possible after commencement of planning for a particular geologic repository area, DOE will submit to NRC a site characterization report. ("Site characterization" refers to the program of exploration and research--including borings, limited excavations and testing--undertaken to determine the suitability of a site for a geologic repository.)

The report will include a description of the site to be characterized; identification and location of alternative media and sites at which DOE intends to conduct site characterization; and a description of the site characterization program, including the extent of any planned excavation and in situ testing and a conceptual design of a repository appropriate to the named site.

The NRC Staff will review the site characterization report, and opportunity will be provided for public comment on both the report and a Staff analysis of the report. NRC also plans to hold local public meetings in the immediate area of the site to be characterized.

To satisfy the requirements of the National Environmental Policy Act, the NRC will consider a minimum of three sites representing a minimum of two geologic media. However, because of the significance of the decision selecting a site for a repository, the Commission expects DOE to submit an even wider range of alternatives.

(2) License application--An application for a license will consist of general information, a safety analysis report and an environmental report. In the general information, DOE is to include a description of the proposed repository; its location; and the proposed schedules for construction, receipt of waste and emplacement of waste at the proposed repository.

A copy of the application will be available for public inspection in NRC's public document rooms, and copies will be sent to appropriate state and local officials and Indian tribes.

(3) Construction authorization--After the NRC staff reviews the application and prepares an environmental impact statement, an NRC licensing board will be appointed to hold public hearings and conduct a formal review. If found appropriate, construction of the repository will be authorized.

(4) License issuance--NRC will conduct a further review of the application and prepare a supplement to the environmental impact statement before deciding whether to issue a license to DOE to receive waste for storage in the facility. An opportunity will be provided for additional public hearings at this stage to consider appropriate issues.

(5) Decommissioning--When the repository has been filled, DOE may submit an application to decommission it. If found appropriate after decommissioning, the NRC may terminate the license.

The new regulations also provide for state and local government and Indian tribal participation in the repository licensing process. States may submit proposals for taking part in the review of the site characterization report and license application. In addition, the NRC staff will be available to discuss with representatives of state and local governments and Indian tribes the progress of site characterization.



A proposed rule on this subject was published for comment in the Federal Register on December 6, 1979, superseding a proposed General Statement of Policy published for comment on November 7, 1978.

Changes have been made in the rule to provide for full participation by Indian tribes in the licensing procedures, to require a separate site characterization report for each site to be characterized and to extend the minimum period for comment on the NRC's draft site characterization analysis from 60 days to 90 days. Several other clarifications and minor changes have been made as a result of the comments received.